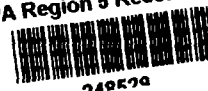


EPA Region 5 Records Ctr.



SITE ASSESSMENT REPORT
FOR
OLD WORLD TRADE CENTER
DETROIT, WAYNE COUNTY, MICHIGAN
TDD # T05-9502-006
PAN EMI1397SAA
DOCUMENT CONTROL # TAT-05-25-05113

May 9, 1995

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Contract No.: 68-WO-0037

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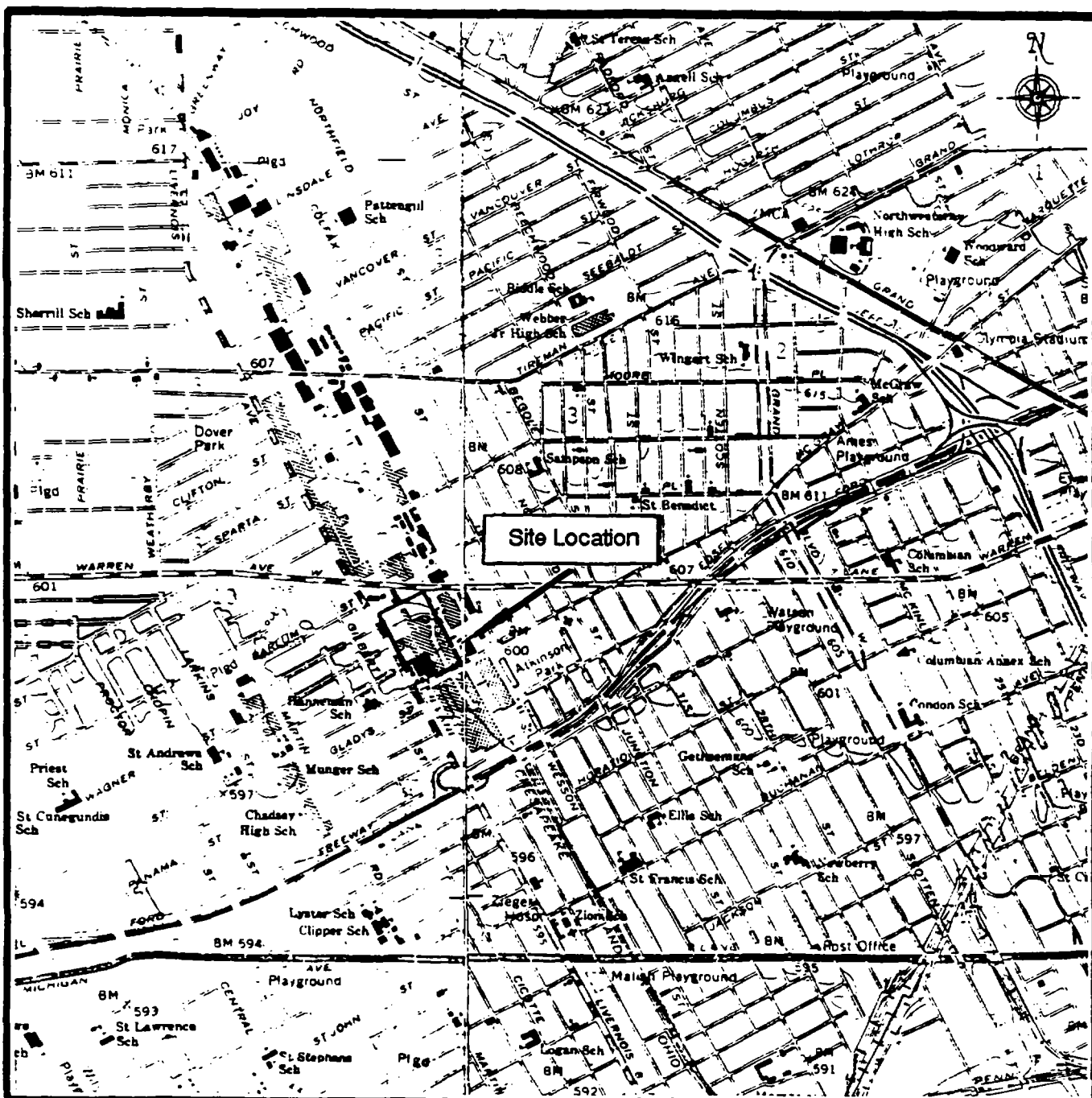
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SOURCE/DATE
U.S. Geographical Survey Topographic Maps
Detroit, Mich. Ont. PR 1980
Dearborn, Mich. PR 1983



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Technical Assistance Team
Region V

TITLE	Site Location Map	FIGURE #	2-1
SITE	Old World Trade Center	SCALE	1:24,000
CITY	Detroit	STATE	Michigan
		TDD #	T05-9502-006

Avenue on the west, was divided into small 10 foot by 20 foot sections. Currently, this building stores household, restaurant, and office wares. Also strewn throughout the building are trash and debris. A second story office space was erected above the entrance into this building.

2.2 SITE HISTORY

The OWTC site has been the location of reported dumping and improper storage of hazardous substances and waste. The property was formerly the Kelsey Hayes facility. In 1986 the facility was purchased by The Ultimate Corporation (UC). A referral from the U.S. EPA Criminal Investigation Department (CID) states that since 1986 portions of OWTC have been leased to businesses that did not generate hazardous wastes. Information is not currently available concerning operations at the site before 1986 and a review of state records indicate that the property taxes are delinquent. The last documented tax payment was made in 1989.

In July of 1994, Michigan Department of Natural Resources (MDNR) received a complaint regarding illegal disposal of waste oils at OWTC. The MDNR representatives performed an initial site visit and reported that oil was observed on the ground and numerous 55-gallon drums were located throughout the facility. The interior of the building was not evaluated during this MDNR inspection.

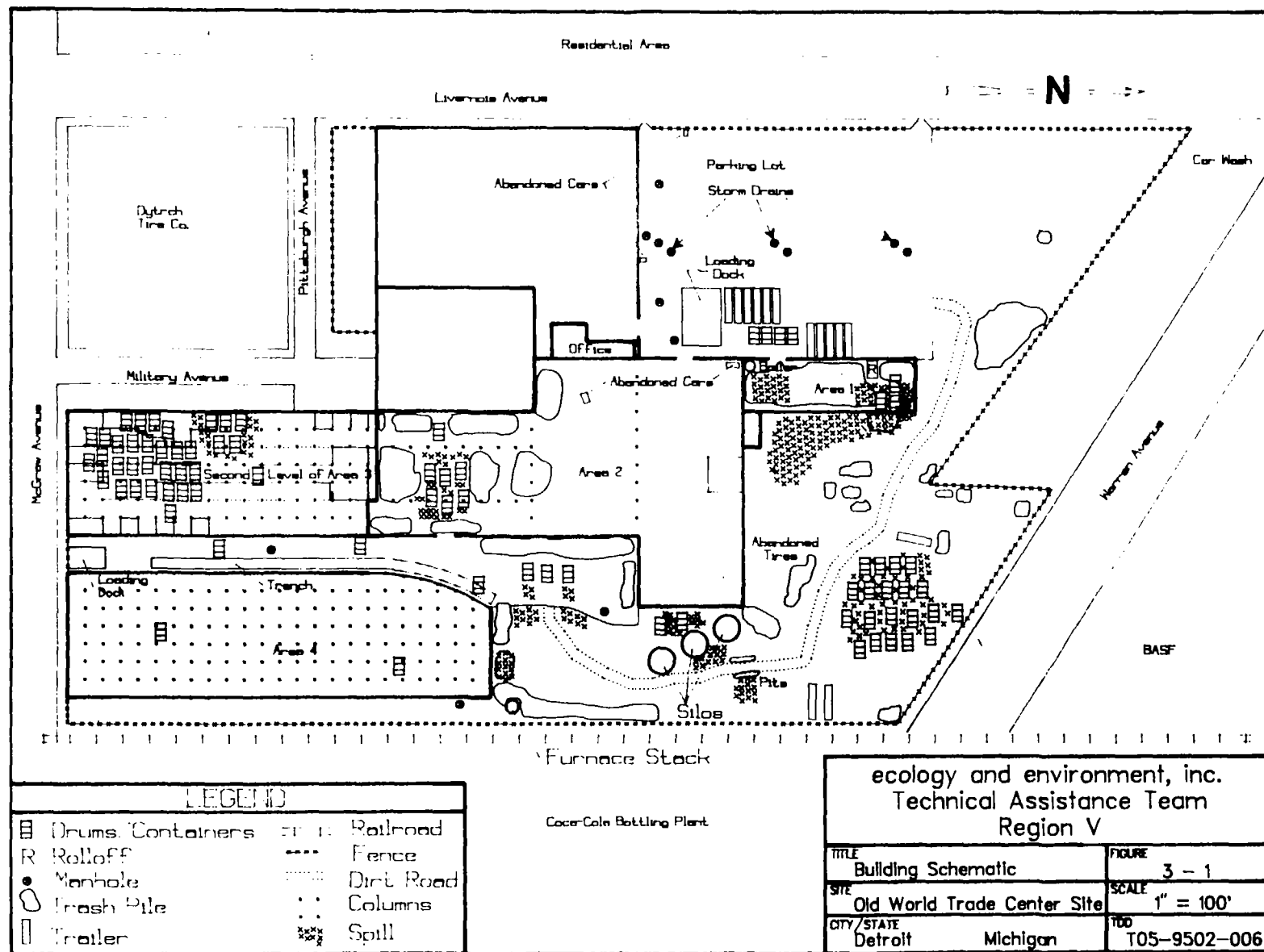
3. SITE ACTIVITIES

3.1 FACILITY DESCRIPTION

On February 21, 1995, OSC David L. Anderson and TAT began a site assessment at OWTC facility. A representative from the U.S. EPA CID was also present. The assessment team was met by the OWTC owner's representative, who briefed the team on site background information.

The facility is comprised of four interconnecting buildings, a dilapidated structure at the northeast corner of the site, a large concrete parking lot on the west side, and an L-shaped dirt area at the north and northeast corner of the facility (Figure 3-1). The site assessment involved only three of the four interconnected buildings. According to the owner's representative, the westernmost building, which was bordered by Livernois Avenue to the west, had not been a site for hazardous waste dumping.

The most accessible and unsecured building was designated by TAT as Area 1, which comprised an area of approximately 7,500 square feet. Inside Area 1 was a trash pile with various types of debris, a 20-yard rolloff filled with unknown contents, and numerous steel and poly drums and containers. The TAT observed numerous 55-gallon drums laying empty and on their sides. Underneath and adjacent to these drums were large spills that appeared to be paint, paint sludges, oil, and black sludge. Many of the drum bungs were noted to be open, and located adjacent to the drums was a very large collection of trash. The trash mound encompassed approximately three-quarters of the building's storage capacity.



An approximately 64,000 square foot building, designated by TAT as Area 2, contained drums, two vehicles, numerous glass panels, trash, and construction material and debris. Approximately seventy 55-gallon drums and smaller containers were staged on top of debris and the on the concrete floor in this area. Many drums located in this area were resting in a pool of liquid and sludge that appeared to have leaked from one or more of the drums.

The southern-most building, designated by TAT as Area 3, was comprised of two floors. The upper floor, approximately 5,500 square feet, appeared to be used as storage. The ground-level floor, approximately 37,500 square feet, contained drums, boxes, bags, and various other metal containers. Approximately 700 drums and containers were located in this area. The drums were of various construction (steel, poly, fiber) and ranged from 15- to 55-gallon capacities. There was a plethora of small containers, with capacities of 1 to 10-gallons, in rusted, perforated, and deteriorated conditions. Drums and containers were haphazardly staged on the floor, pallets, and on top of each other. Steel and poly 55-gallon drums were staged on pallets, which were on top of 300-600 pound fiber drums. In most areas where the steel drums were staged on the fiber drums, the fiber drums had become saturated with rainwater or other liquids and had collapsed. The collapsing of the fiber drums left the steel drums leaning and in danger of releasing their contents. Some of the steel and poly drums were observed leaking and others were on the verge of falling completely off their pallet. Various drums and containers were without lids, on their side, and/or tilted, thus allowing the contents to leak onto the floor, debris, and other containers.

Labelling information indicated the vast majority of drums and containers originally held flammable liquids and corrosives. Other label information indicated corrosives, but many drums were identified only by trade names instead of chemical names and nomenclature.

After the building interiors had been mapped, the assessment team exited the buildings and began the exterior reconnaissance.

Two abandoned vehicles, eleven semi-truck trailers, and approximately twenty 55-gallon drums and small containers were observed from the parking lot area. Six personnel access hatches to sewers and three storm drains were also located in the parking lot area. Located around the south and east borders of the buildings were large masses of trash, construction debris, and metal debris. Some of these piles were over 15 feet high and 75 feet long.

Numerous 55-gallon drums, which ranged in content volumes from empty to full, were observed around the exterior of the buildings. Several additional semi-truck and mobile-home trailers were observed at the northeast corner of the facility. One mobile trailer appeared to have been scrapped of all aluminum siding, metal, and electrical wires. Approximately two hundred 55-gallon steel and poly drums were piled directly south and southeast of this trailer. The drums appeared to have been emptied and abandoned to drain their residual contents onto this area. Historical black oily staining surrounded the drum mound and a large surface spill was observed northwest of the drum mound. The adjacent spill covered an approximately 20 foot by 20 foot area. The spilled material was white and light-brown and appeared to be congealed.

An unpaved, dirt road was observed adjacent to the southeast corner of the parking lot, along the north and northeast portion of the site, winding around the interconnected buildings. Midway along the eastern fenceline and approximately ninety feet west, the dirt road joins a large concrete pad. The pad appeared to have served, at one time, as a loading/unloading area between the four interconnected buildings and the dilapidated structure.

Heaps of trash, tires, and mattresses were piled on both sides of the dirt road. South of the drum pile located at the northeast corner of the facility, on either side of the dirt road, are two trench-like pits. Both pits contain what appears to be an oily liquid and sludge mixture, which is black in color and opaque. Pit number 1 (Pit 1), located on the east side of the road, contains

greater than twenty feet of this material, according to a report by the owner's representative. The black material appeared to have oozed out of the pit onto the surface of the ground. The pit appears to be a concrete tunnel of some type that could extend or be interconnected a long distance underground; it is impossible to estimate the entire volume of the oily liquid and sludge material. The dimensions, which were calculated by probing the pit and surrounding area, are currently estimated to be approximately 9 feet in depth, and approximately 15 feet by 25 feet (based on visual inspection of stained soils). Based upon the visual appearance of Pit 1 and the above dimensions, a minimum of 27,000 gallons (estimate) of contaminated material/hazardous waste are associated with this pit.

Pit number 2 (Pit 2) is located on the west side of the dirt road and is topped by several metal grates. The estimated area dimensions of Pit 2 were 10 feet by 20 feet and approximately 7 feet in depth; but of the 7 feet, 3 feet consisted of the black sludge while the other 4 feet appeared to be a clear liquid (possibly water). Minimum approximate volume is calculated at 4,500 gallons of sludge.

Exact dimensions and extent of contamination in reference to the two pits have been difficult to determine. According to several local individuals, there are numerous steam and maintenance lines traversing the facility grounds. Both pits may enter or connect into steamlines or maintenance tunnels reportedly located under the facility. If this were the case, the pits could be much larger than they appear from the surface. Attempts were made to confirm and estimate potential volumes of hazardous waste that may have been deposited in the lines, but blueprints and other facility reports were unavailable.

A third pit, reportedly located east of Pit 1, contains additional oil-like waste. Approximately ten feet west of the dirt road and Pit 2 are three large concrete silos. The silos were installed on an east-west diagonal with the building. The silo contents, if any, have not been determined due to their

inaccessibility from the ground. Several drums, with volumes of contents ranging from empty to full, have been dumped in the area between the silos and the building. Soils in this area appear darkly stained and the drums are rusting and badly deteriorated.

On February 24, 1995, OSC Anderson, the U.S. EPA Civil Investigator, and TAT returned to OWTC to document additional observations. During this site visit, the Civil Investigator was briefed by the facility manager and collected available information regarding the site history.

During one of the many site visits by TAT, an additional semi-trailer loaded with furniture was observed. The semi-trailer was staged south of the large debris mound located north of the parking lot. On another site visit this semi-trailer had been emptied and moved to the parking lot area. U.S. EPA representatives contacted the site owner and requested that all site activity cease immediately.

3.2 SAMPLING ACTIVITIES

On March 6, 1995, TAT returned to OWTC to collect samples for enforcement and site assessment evaluation. TAT performed a reconnaissance, employing air monitoring, of the interior of the western-most building. The owner's representative accompanied TAT on this reconnaissance. The building was divided into small 10 foot by 20 foot sections that were utilized by individuals who rented the space during OWTC's flea market operations.

Currently, this building stores household, restaurant, and office wares. Trash and debris were also strewn throughout the building. Several propane tanks were observed throughout the building. A second story office space was erected above the entrance into this building. The owner's representative stated that all of the offices were empty.

Interior building reconnaissance of the other three buildings was conducted to evaluate lighting and drum access. For all reconnaissance efforts, TAT utilized a Photoionization Detector (PID), a radiation meter, and a Combustible Gas Indicator/Oxygen

Sensor (CGI/O₂) meter to determine the ambient quality of the air inside the buildings. All initial air monitoring readings were at background levels. The PID indicated levels of less than 1 part per million (ppm) and the CGI/O₂ readings remained at 19.5 percent oxygen and less than 1 percent lower explosive limit (LEL). The radiation meter also indicated no rise in meter readings above 0.03 milliRems per hour (mR/h). The TAT began sampling in Area 2 and collected four samples from 55-gallon drums (Figure 3-2). Each sample was collected utilizing dedicated nitrile gloves and thieving tubes, then deposited into certified clean jars. The drums that were selected for sampling in this area were safely accessible and were marked "TAT" and the corresponding sample number.

The first sample, OWD1, could not be collected. The drum (TAT1) was less than one-fifth full of a hard solid and the equipment utilized for sampling solids from drums (steel trier) was not long enough to extract the sample. Sample number OWD2 was collected from a full, steel, 55-gallon drum (TAT2). The drum contents appeared as a light-yellow, clear, semi-solid, which hardened when exposed to air. A light-brown, slightly opaque, liquid was collected from another full, steel, 55-gallon drum (TAT3) and the sample was designated as sample number OWD3. The fourth sample was collected from a blue, poly, 55-gallon drum (TAT4) and was labelled as sample number OWD4. The contents of the drum appeared to be a light-yellow, clear, liquid.

A total of five additional drum and container samples were collected from Area 3. The first sample collected in this area was a bilayered sample, designated as sample number OWD5. Sample OWD5 was collected from a black, poly, 15-gallon drum (TAT5) with the hand-written word "Stripper" scrawled on the side. The drum contents consisted of a top portion that was a brown, opaque, liquid and a bottom layer that was also a liquid but was light-brown in color and opaque in clarity. Sample number OWD6 appeared as a black, opaque, liquid and was collected from a full, steel, 55-gallon drum (TAT6). A yellow, clear, liquid was collected from

another full, steel, 55-gallon drum (TAT7) and labelled as sample number OWD7. Sample number OWD12 appeared as a brown, opaque, liquid that was collected from an orange, one-half full, steel, 55-gallon drum (TAT12). Sample number OWD13, which was collected from a full, steel, drum (TAT13), contained a black, opaque, liquid.

Sample OWD8 was a black, opaque, liquid that was collected from a drum (TAT8) staged at the east end of the parking lot and adjacent to Area 1. Directly adjacent and to the south of drum TAT8, the TAT collected a biphasic sample designated as OWD9 from a steel, 55-gallon drum laying on its side. The contents of drum TAT9 appeared to have a top phase that was an amber, clear, liquid and the bottom phase that appeared as a light-yellow, opaque, solid. The sample was obtained from a hole that had been punched in the side of the drum. Sample number OWD10 appeared as a blue/green, opaque, liquid which was collected from a one-half full, steel, 55-gallon drum (TAT10). Sample number OWD11 was collected from an orange, steel, full, 5-gallon container (TAT11) that contained a black, opaque, liquid.

Two samples were collected from the pits located at the east-central side of the facility. Pit sample number OWP1 appeared as a black, opaque, sludge. Pit sample number OWP2 was also a black, opaque, sludge, but it was more viscous than sample number OWP1.

Sample number OWC1 was a light-brown, opaque, sludge that was collected from west of the drum mound located at the northeast corner of the site. Many of the drums piled in this area were observed to be actively leaking and there appeared to be material and/or staining directly under and around the drums. An attempt was made to collect a soil sample at depth in this location. This attempt was unsuccessful due to the frozen ground and the large 3-inch gravel encountered during hand-augering.

Sample number OWS1 was a composite of soils, liquids, and sludges observed on the surface of Area 1, inside the northeast door. The material collected was a grainy semi-solid with small quantities of liquid and sludge. Sample OWS1 was not a completely

representative sample of the area since the area was mostly frozen and only the unfrozen portions were collected.

4. ANALYTICAL RESULTS

Samples collected from the OWTC site were obtained in accordance with the site sampling plan (Appendix A). On February 6, 1995, through February 7, 1995, the TAT collected eleven liquid samples, labelled OWD3, OWD4, OWD5, OWD6, OWD7, OWD8, OWD9, OWD10, OWD11, OWD12, and OWD13; two semi-solid or solid samples, labelled OWD2 and OWS1; and three sludge samples, labeled OWP1, OWP2, and OWC1 from drums, containers, pits, soil, and surface spillage located on site. Selection of these samples for laboratory analysis was based on the results of on-site hazard categorization testing (Hazcat). The samples were delivered to the laboratory between February 6, 1995, and February 7, 1995, as referenced in the Chain of Custody sheets.

Samples collected from OWTC site were analyzed in accordance with U.S. EPA Solid Waste 846 (SW-846) Methods by Clayton Environmental Laboratories, Novi, Michigan, under analytical TDD Number T05-9502-802. The positive results of the analyses are listed in Table 4-1. The analytical package and quality assurance review are shown in Appendix B.

Table 4-1

OLD WORLD TRADE CENTER
POSITIVE ANALYTICAL RESULTS
March 27, 1995

All results are in parts per million (ppm) unless otherwise noted

Parameter	OWD2	OWD3	OWD4	OWD5	OWD6	OWD7	OWD8	OWD9
Flash Point	68°F	>200°F	NA	NA	≤72°F	NA	≤40°F	>200°F
pH	NA	NA	NA	1.8	NA	NA	NA	NA
Ethylbenzene	<25,000	<4.0	<1.0	NA	4,000	<0.001	<12,500	NA
Styrene	160,000	<4.0	<1.0	NA	<2,500	0.034	<12,500	NA
Toluene	<25,000	44.0	<1.0	NA	58,000	0.032	125,000	NA
1,1,2-Trichloroethane	<25,000	<4.0	<1.0	NA	5,000	<0.001	<12,500	NA
Total Xylenes	<75,000	<10.0	<3.0	NA	12,000	<0.003	50,000	NA
Barium (Total)	NA	NA	NA	<0.5	0.6	NA	NA	<1.0
Cadmium (Total)	NA	NA	NA	<0.13	<0.13	NA	NA	<0.5
Chromium (Total)	NA	NA	NA	<0.5	<0.5	NA	NA	<1.0
Copper (Total)	NA	NA	NA	<0.5	<0.5	NA	NA	<1.0
Lead (Total)	NA	NA	NA	<0.5	<0.5	NA	NA	<1.0
Silver (Total)	NA	NA	NA	0.01	0.03	NA	NA	<0.01
Zinc (Total)	NA	NA	NA	<0.5	9.0	NA	NA	<0.4

< - Less than, at the practical quantitation limit

NA - Not Analyzed

U - The material was analyzed for but not detected.

J - The values are considered estimates because not all of the quality control criteria were met.

Source: Ecology & Environment, Inc., March 1995

Table 4-1 Cont.

OLD WORLD TRADE CENTER
POSITIVE ANALYTICAL RESULTS

March 27, 1995

All results are in parts per million (ppm) unless otherwise noted

Parameter	OWD10	OWD11	OWD12	OWD13	OWS1	OWP1	OWP2	OWC1
Flash Point	NA	≤42°F	≤46°F	136°F	NA	130°F	>200°F	50/58°F
2-Butanone	<125,000	<25,000	500	<100	<30.0	<60.0	<10.0	<100
Ethylbenzene	50,000	6,000	70.0	20.0	<3.0	27.0	<1.0	60.0
Styrene	<12,500	<2,500	<30.0	<10.0	<3.0	<6.0	<1.0	<10.0
Toluene	110,000	52,000	230	20.0	4.0	<6.0	<1.0	20.0
1,1,2-Trichloroethane	<12,500	<2,500	<30	<10.0	<3.0	<6.0	<1.0	<10.0
Total Xylenes	201,000	31,000	250	380	12	140	<4.0	220
Aroclor - 1248	NA	NA	NA	NA	0.62 J	<0.3	<0.3	NA
Aroclor - 1254	NA	NA	NA	NA	0.54 J	<0.3	<0.3	NA
Aroclor - 1260	NA	NA	NA	NA	0.64 J	<0.3	<0.3	NA
Barium (Total)	<1.0	NA	NA	NA	160	1.0	1.0	NA
Cadmium (Total)	<0.5	NA	NA	NA	7.0	<0.5	<0.5	NA
Chromium (Total)	<1.0	NA	NA	NA	35.0	<1.0	<1.0	NA
Copper (Total)	2.0 U	NA	NA	NA	120	1.0 U	1.0 U	NA
Lead (Total)	<1.0	NA	NA	NA	1,200	3.0	4.0	NA
Silver (Total)	<0.2	NA	NA	NA	1.3	<0.2	<0.2	NA
Zinc (Total)	9	NA	NA	NA	430	4.0	7.0	NA

5. POTENTIAL THREATS

The documented conditions at OWTC site meet the criteria for a removal action as stated in the NCP Section 300.415 (b) (2), specifically:

- (i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants;

Resource Conservation and Recovery Act (RCRA) Hazardous Wastes by virtue of the characteristics of corrosivity and ignitability have been identified in drums and small containers at the site. Many of the drums are open or in such a deteriorated condition that the contents are easily accessible to trespassers and domestic or feral animals that might enter the building or premises. Most of the facility doors are locked with chains and padlocks, but numerous broken windows and unhinged doors provide direct access to the interior of the facility. Area 1 is completely open and accessible; doors are either off their hinges or are unlocked. The potential exists that any persons who may enter the building and vandalize the drums and other containers could release the hazardous materials, injuring themselves by contact. Additionally, spilling the materials could increase the accessibility of the contents to other persons or cause migration of contaminants off site. These materials, in their current condition or if spilled, would pose a threat via direct contact, inhalation, and/or ingestion to any human trespassers or animals entering the building or the facility grounds.

- (iii) Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release;

Located at the facility are approximately 900 drums and 1000 small containers of various sizes. Many of these containers are unmarked and all of the storage containers are in various stages of deterioration. As the building is abandoned and without power, the containers are subjected to seasonal freeze-thaw cycles, which will accelerate the rate of decay.

The exact contents of the containers located on site are unknown at this time; however, labels on some of the containers include; toluene (D001, U220), methyl ethyl ketone, and "containing" toluene di-isocyanate (D003, U223). Limited analytical samples collected from the drums, small containers, and surface spillage during the site assessment at the facility indicate hazardous levels of volatile organic compounds and total metals. All of these materials could be extremely detrimental to human health and the environment if the containers ruptured and additional contents were released.

Many of the drums and miscellaneous containers observed on site were leaking and improperly staged. Steel drums were staged on pallets that were supported by fiber drums that were in various degrees of deterioration. The already precarious staging of hazardous wastes at the site could be further compromised by trespasses of humans or animals. Any person or animal coming into contact with the containers could cause them to tip, fall, or crash into other containers, thus ultimately leading to additional leaking and mixing of potentially incompatible materials. Many of the containers observed on site were without lids or without adequate closure of bungs.

- (iv) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;

Several samples (OWP1, OWS1, and OWC1), which were collected from a pit, soil, and an uncontainerized surface spillage, indicated waste characteristics of ignitability. Additional analyses indicated contamination by polychlorinated biphenyls (PCBs), specifically Aroclors 1248, 1254, and 1260 (OWS1). Off-site migration of contaminants could follow several pathways including; becoming airborne during the dryer months, surface water runoff, and transportation off-site via human or animal vectors. Airborne migration of contaminants could occur due to unsuppressed dust, comprised of soil and waste components, blowing from the site into the community. Surface water runoff occurs if there is poor percolation of precipitation through the site soils or if the rate of precipitation exceeds the rate of permeability. Dumping of numerous types of waste have occurred at the site. Along with the hazardous waste deposited at the site, were large loads of construction and other types of debris. Debris piles and buried municipal trash limits the amount of precipitation that can flow into the soils, thus much of the snow-melt water and rainwater accumulates on the surface where it comes into contact with hazardous wastes. Water soluble wastes, such as acids and bases, along with heavy metals and volatile organics collect in these areas and further precipitation can cause them to flow off site.

- (v) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;

There is evidence of past large spills throughout the site (Area 1, Area 2, Area 3, and building exteriors) and there is the potential for off-site migration of contaminants via airborne dust or surface runoff. The deteriorated condition of the building allows rainwater and snow into the building during all

precipitation events. As many of the drums and small containers are open-topped, rainwater or snow melt water entering through the roof can also cause incompatible substances such as acids and bases, as well as other chemicals, to overflow their containers and become mixed or migrate off site.

(vi) Threat of fire or explosion;

The contents of numerous drums, containers, surface spillage, and Pit 1 have been shown to have the waste characteristic of ignitability. A potential for these materials and other site hazardous wastes to be incompatible exists and if spilled, could result in an exothermic reaction or explosion and fire, or the explosive release of toxic gases. Vandals, trespassers, or security personnel entering the facility grounds or buildings could ignite fires through careless or malicious activities.

6. SUMMARY

Observations documented during the site assessment at OWTC facility indicate that the conditions at the site constitute an imminent and substantial endangerment to public health and welfare. This conclusion is based on observations by the OSC and the TAT, as well as investigative reports from state and city officials, as evaluated against the criteria set forth in the NCP.

The materials found in the drums, small containers, and areas of surface spillage are RCRA hazardous substances and wastes with the characteristics of ignitability and corrosivity (D001 and D002), per 40 CFR 261. The building is in a state of deterioration, and stains on the surface soils, floors, and walls in the building indicate that spills of chemicals have occurred in the past. The site fence is not secure and could be readily accessed, resulting in possible human exposure through contact, inhalation, or ingestion of the waste and/or contaminated soils.

Based on the threat posed by the materials on site, a removal of drums, containers, containerization of historical spillage, and proper disposal of contaminated soils is recommended to alleviate the immediate threat. In addition, other removal activities, such as an extent of contamination study to determine the extent of migration of past spills may be necessary.

SAMPLE PLAN

SITE NAME: Old World Trade Center TDD #: T05-9502-006
SAMPLERS: D. Iacovone, K. Ahlgren PROJECT CODE: ZT3051/EMI1347SAA
LAB: Clayton Environmental Consultants SAMPLE #s: _____
22345 Roethel Drive DATE OF SAMPLING: 2/21/95
Novi, Michigan DATE SHIPPED: _____
TYPE OF LAB: CRL CLP XX COMMERCIAL

GUARANTEED TURNAROUND TIME: 14 calendar days verbal, 21 calendar days hardcopy

MATRIX

NO. OF SAMPLES

Soil/Sediment
Sludge
Drum/Tanks
Wipes
Liquids
Air
Other: _____

3
15
2

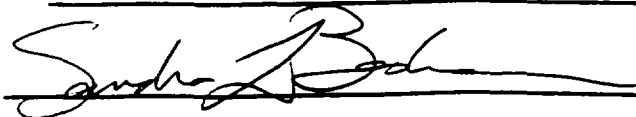
PURPOSE OF SAMPLING:

- ☒ Site Characterization
☐ Extent of Contamination
☒ Confirm Presence of Suspected Contaminant
☐ Disposal/Treatment of Materials
☐ Confirm Efficiency of Existing Treatment Systems
☒ Other: Enforcement action

ATTACHMENTS:

- ☒ Map of Sample Locations
☒ Chain-of-Custody
☒ Field Data Sheets
☒ Drum Logs
☐ Calibration Sheets
☐ Other: _____

PLAN REVIEWED BY: _____



SAMPLING METHODS:

Drum samples will be collected with drum thieves. Soil samples will be collected with disposable sampling devices such as spoons or trowels.

Samples collected from sewer drains will be collected with a jar with string attached.

DECON PROCEDURE:

Decontamination of sampling will be unnecessary as all sampling devices will be dedicated to individual sample points. Sample jars will be decontaminated using a soap and water wash, a water rinse, and then drying with paper towels.

DISPOSAL OF RESIDUE AND DECON MATERIALS:

Decon materials will remain on site. Sampling equipment will be disposed of with the PPE.

DISPOSAL OF SAMPLES:

Disposal of samples will be the responsibility of the laboratory.

ADDITIONAL MATERIALS REQUIRED AND LOADED IN RESPONSE VEHICLE:

Additional materials required will be PPE, air monitoring equipment, breathing air cylinders (spare), a hazcat kit, a sample cooler, vermiculite, additional sample jars, and personal gear.

LIQUID SAMPLES

No. of Surface Samples _____

No. of Well Samples _____

No. of Duplicates _____

No. of Blanks _____

<u>ANALYSTS</u>	<u>NO. OF SAMPLES</u> <u>INCL. DUPS & BLANKS</u>	<u>NO. OF CONTAINERS</u> <u>PER SAMPLE</u>	<u>TOTAL NO. OF</u> <u>CONTAINER</u>	<u>PRESERVATIVE</u> <u>REQUIRED</u>
Extractables				
(Low)	_____	x 2 =	_____ 80 oz. amber	_____ ice
(Medium)	_____	x 8 =	_____ 16 oz. glass	
Volatiles				
(Low Only)	_____	x 2 =	_____ 40 ml. glass	_____ ice
All High Hazard				
Organics	_____	x 1 =	_____ 120 ml. glass	
Dioxin				
(Low)	_____	x 2 =	_____ 80 oz. amber	_____ ice
Metals				
(Low)	_____	x 1 =	_____ 1 liter HDPE	_____ 5 ml.
(Medium)	_____	x 1 =	_____ 16 oz. glass	_____ HNO ₃
Cyanide				
(Low)	_____	x 1 =	_____ 1 liter HDPE	_____ 5 ml.
(Medium)	_____	x 1 =	_____ 16 oz. glass	_____ NaOH
All High Hazard				
Inorganics	_____	x 1 =	_____ 120 ml. glass	
Compatibility	_____	x 1 =	_____ 8 oz. glass	
Disposal	_____	x 1 =	_____ 16 oz. glass	
_____	_____	x _____ =	_____	_____

TOTAL NO. OF CONTAINERS REQUIRED FOR LIQUID SAMPLES:

_____ 40 ml. glass
 _____ 8 oz. glass
 _____ 16 oz. glass
 _____ 1 l. HDPE
 _____ 80 oz. amber

SOIL/SEDIMENTS/SLUDGES

No. of Surface Samples _____ No. of Composites _____
 No. of Depth Samples _____ No. of Grabs _____
 No. of Duplicates _____

ANALYSIS	NO. OF SAMPLES INCL. DUPES & BLANKS	NO. OF CONTAINERS PER SAMPLE	TOTAL NO. OF CONTAINER
Extractables (Low/Med)	_____	x 1	_____ 8 oz. glass
Volatiles (Low Only)	_____	x 2	_____ 120 ml. glass
All High Hazard Organics	_____	x 1	_____ 120 ml. glass
Dioxin	_____	x 1	_____ 4 oz. glass
Metals (Low/Med)	_____	x 1	_____ 8 oz. glass
Cyanide (Low)	_____	x 1	_____ 8 oz. glass
Cyanide (Med)		METAL SAMPLE SUFFICES	
All High Hazard Inorganics	_____	x 1	_____ 120 ml. glass
Compatibility	_____	x 1	_____ 8 oz. glass
Disposal	_____	x 1	_____ 16 oz. glass

TOTAL NO. OF CONTAINERS REQUIRED FOR SOILS/SEDIMENTS/SLUDGES:

_____ 8 oz. glass
 _____ 120 ml. glass
 _____ 4 oz. glass
 _____ 16 oz. glass

ICE REQUIRED AS PRESERVATIVE: _____ YES _____ NO

DRUMS/TANKS

No. of Grabs _____

No. of Composites _____

No. of Duplicates _____

MAJORITY OF DRUM AND TANK SAMPLES WILL BE CONSIDERED HIGH HAZARD AND SHOULD BE COLLECTED AS FOLLOWS:

<u>ANALYSIS</u>	<u>NO. OF SAMPLES INCL. DUPES & BLANKS</u>	<u>NO. OF CONTAINERS PER SAMPLE</u>	<u>TOTAL NO. OF CONTAINERS</u>
Organics	_____	x 1	_____ 120 ml. glass
Metals & Cyanide	_____	x 1	_____ 120 ml. glass
Compatibility	_____	x 1	_____ 8 oz. glass
Disposal	_____	x 1	_____ 16 oz. glass

TOTAL NO. OF CONTAINERS REQUIRED:

_____ 120 ml. glass

_____ 8 oz. glass

_____ 16 oz. glass

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD3	Date Sampled:	03/06/95
Lab Number:	002c	Date Received:	03/06/95
Sample Type:	Liquid	Date Analyzed:	03/13/95
Analytical Method:	EPA 1010		
Analyst:	DT		

Analyte	Analytical Result
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Flashpoint	>200°F
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General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable



ecology and environment, inc.

12251 UNIVERSAL TAYLOR MICHIGAN 48180. TEL (313) 946-0900

International Specialists in the Environment

M E M O R A N D U M

DATE: April 21, 1995

TO: Karen T. Smith, TAT Project Manager, E & E, Detroit, MI

FROM: Herbert B. Langer, TAT Chemical Engineer, E & E, Detroit, MI

THROUGH: Sandra L. Basham, ATATL, E & E, Detroit, MI *SLB*
David Hendren, TAT Analytical Services Manager, E & E, Chicago, IL
Mary J. Ripp, TAT QA Reports Manager, E & E, Chicago, IL

SUBJECT: Total Metals Analysis Data Quality Assurance Review,
Old World Trade Center, Detroit, Wayne County, Michigan

REFERENCE: Project TDD T05-9502-006 Analytical TDD T05-9502-802
Project PAN EMI1397SAA Analytical PAN EMI1397AAA

The data quality assurance (QA) review of four liquid, one solid, and two sludge samples, collected from the Old World Trade Center Site, is complete. The samples were collected on March 6, 1995, and March 7, 1995, by the Technical Assistance Team (TAT) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to Clayton Environmental Laboratories, Novi, Michigan, for analysis. The laboratory analyses were performed according to United States Environmental Protection Agency (U.S. EPA) Solid Waste-846 (SW-846) Method 6010 to determine total Resource Conservation and Recovery Act (RCRA) listed metals, including copper and zinc, and Method 7470 to determine mercury.

Sample Identification

<u>E & E</u> <u>Identification No.</u>	<u>Laboratory</u> <u>Identification No.</u>
OWD5	24532.00 006b
OWD6	24532.00 005c
OWD9	24562.00 006b
OWD10	24562.00 007c
OWP1	24562.00 008b
OWP2	24562.00 009a
OWS1	24562.00 010b

Data Qualifications

I. Sample Holding Time: Acceptable

The samples were collected by TAT and received by the laboratory March 6, 1995, and March 7, 1995. Total metals analyses were completed March 18, 1995. All activities were performed within the required holding times for the methods and matrices (six months for metals, 28 days for mercury).

II. Initial and Continuing Calibration Verification: Acceptable

Initial calibrations were performed at the beginning and end of each analytical run. Continuing calibration samples and blanks were analyzed after every ten samples during the run, as required. Calibration results were within 90% and 110% of the mean standard values, as required. Mercury calibration results were within 80% and 120% of the mean standard value, as required. The correlation coefficients for atomic absorption instrument calibration for mercury analyses were greater than 0.995, as required.

III. Blanks: Qualified

Method blanks were prepared and analyzed at the required frequency during each analytical run. Lead was detected in the method blank prepared for samples OWD5 and OWD6. Since lead was not detected in either sample, qualification or correction of the results was not required. Copper was detected in the blank prepared and analyzed with the rest of the samples. Sample concentrations less than ten times the blank concentration have been qualified U, as not detected. No other target analytes were detected in the method or calibration blanks.

IV. Instrument Interference Check Sample (ICS): Acceptable

ICSSs were analyzed at the beginning and end of each analytical run, as required. All results were within ± 20 percent of the mean value, as required.

V. Optional Quality Control Checks: Acceptable

Matrix spikes (MS) and matrix spike duplicates (MSD) were prepared and analyzed during each analytical run. The laboratory did not report which samples were used to prepare the MS and MSD. The laboratory did report that the percent recovery of the spike compounds and relative

percent differences between MS and MSD results were within the laboratory's acceptable quality control guidelines.

VI. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on the criteria as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 3.0, Metallic Inorganic Parameters and Section 2.7, Quality Assurance Requirements. Based upon the information provided, the data are considered acceptable for use with the above stated qualifications.

Data Qualifiers and Definitions

- U - The material was analyzed for but not detected. The associated numerical value is the sample quantitation limit.

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24532.00
Client Reference#: ZT3054/T05-9502-802

Sample Identification: OWD5 Date Sampled: 03/06/95
Lab Number: 006b Date Received: 03/06/95
Sample Type: Liquid (Non-Aqueous)
Analyst: DH

Analyte	Concentration (mg/L)	LOD (mg/L)	Preparation Method and Date		Analytical Method and Date	
Arsenic	<0.5	0.5	EPA 3010	03/09/95	EPA 6010A	03/10/95
Barium	<0.5	0.5	EPA 3010	03/09/95	EPA 6010A	03/10/95
Cadmium	<0.13	0.13	EPA 3010	03/09/95	EPA 6010A	03/10/95
Chromium	<0.5	0.5	EPA 3010	03/09/95	EPA 6010A	03/10/95
Copper	<0.5	0.5	EPA 3010	03/09/95	EPA 6010A	03/10/95
Lead	<0.5	0.5	EPA 3010	03/09/95	EPA 6010A	03/10/95
Mercury	0.01	0.01	EPA 7470	03/09/95	EPA 7470	03/10/95
Selenium	<0.5	0.5	EPA 3010	03/09/95	EPA 6010A	03/10/95
Silver	<0.1	0.1	EPA 3010	03/09/95	EPA 6010A	03/10/95
Zinc	<0.5	0.5	EPA 3010	03/09/95	EPA 6010A	03/10/95

General Notes

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24532.00
Client Reference#: ZT3054/T05-9502-802

Sample Identification: OWD6 Date Sampled: 03/06/95
Lab Number: 005c Date Received: 03/06/95
Sample Type: Liquid (Non-Aqueous)
Analyst: DH

Analyte	Concentration (mg/L)	LOD (mg/L)	Preparation Method and Date		Analytical Method and Date	
Arsenic	<0.5	0.5	EPA 3010	03/09/95	EPA 6010A	03/10/95
Barium	0.6	0.5	EPA 3010	03/09/95	EPA 6010A	03/10/95
Cadmium	<0.13	0.13	EPA 3010	03/09/95	EPA 6010A	03/10/95
Chromium	<0.5	0.5	EPA 3010	03/09/95	EPA 6010A	03/10/95
Copper	<0.5	0.5	EPA 3010	03/09/95	EPA 6010A	03/10/95
Lead	<0.5	0.5	EPA 3010	03/09/95	EPA 6010A	03/10/95
Mercury	0.03	0.01	EPA 7470	03/09/95	EPA 7470	03/10/95
Selenium	<0.5	0.5	EPA 3010	03/09/95	EPA 6010A	03/10/95
Silver	<0.1	0.1	EPA 3010	03/09/95	EPA 6010A	03/10/95
Zinc	9	0.5	EPA 3010	03/09/95	EPA 6010A	03/10/95

General Notes

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference#: 2T3054, T05-9502-002

Sample Identification: OWD9 Date Sampled: 03/07/95
Lab Number: 006b Date Received: 03/07/95
Sample Type: Amber, clear, liquid;
light yellow, opaque, sludge
Analyst: DH

Analyte	Concentration (mg/L)	LOD (mg/L)	Preparation Method and Date	Analytical Method and Date
Metals				
Arsenic	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Barium	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Cadmium	<0.5	0.5	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Chromium	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Copper	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Lead	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Mercury	<0.01	0.01	EPA 7470 03/09/95	EPA 7470 03/10/95
Selenium	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Silver	<0.2	0.2	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Zinc	<0.4	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95

General Notes

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference#: 2T3054, T05-9502-002

Sample Identification: OWD10 Date Sampled: 03/07/95
Lab Number: 007c Date Received: 03/07/95
Sample Type: Liquid (Non-Aqueous)
Analyst: DH

Analyte	Concentration (mg/L)	LOD (mg/L)	Preparation Method and Date	Analytical Method and Date
Metals				
Arsenic	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Barium	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Cadmium	<0.5	0.5	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Chromium	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Copper	2	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Lead	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Mercury	<0.01	0.01	EPA 7470 03/09/95	EPA 7470 03/10/95
Selenium	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Silver	<0.2	0.2	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Zinc	9	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95

General Notes

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference#: 2T3054, T05-9502-002

Sample Identification: OWP1 Date Sampled: 03/07/95
Lab Number: 008b Date Received: 03/07/95
Sample Type: Black, opaque, sludge
Analyst: LB

Analyte	Concentration (mg/L)	LOD (mg/L)	Preparation Method and Date	Analytical Method and Date
Metals				
Arsenic	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Barium	1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Cadmium	<0.5	0.5	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Chromium	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Copper	1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Lead	3	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Mercury	<0.01	0.01	EPA 7470 03/09/95	EPA 7470 03/10/95
Selenium	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Silver	<0.2	0.2	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Zinc	4	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Pesticides				
Aldrin	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
alpha-BHC	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
beta-BHC	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
delta-BHC	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
gamma-BHC	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
alpha-Chlordane	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
gamma-Chlordane	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
4,4'-DDD	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
4,4'-DDE	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
4,4'-DDT	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
Dieldrin	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
Endosulfan I	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
Endosulfan II	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
Endosulfan sulfate	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
Endrin	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
Endrin aldehyde	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
Endrin ketone	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
Heptachlor	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
Heptachlor epoxide	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
Methoxychlor	<0.3	0.3	EPA 600 03/14/95	EPA 8080 03/21/95
Technical chlordane	<0.2	0.2	EPA 600 03/14/95	EPA 8080 03/21/95
Toxaphene	<3	3	EPA 600 03/14/95	EPA 8080 03/21/95

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference#: 2T3054, T05-9502-002

Sample Identification: OWP2 Date Sampled: 03/07/95
Lab Number: 009a Date Received: 03/07/95
Sample Type: Black, opaque, sludge
Analyst: LB

Analyte	Concentration (mg/L)	LOD (mg/L)	Preparation Method and Date	Analytical Method and Date
Metals				
Arsenic	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Barium	1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Cadmium	<0.5	0.5	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Chromium	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Copper	1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Lead	4	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Mercury	<0.01	0.01	EPA 7470 03/09/95	EPA 7470 03/10/95
Selenium	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Silver	<0.2	0.2	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Zinc	7	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Pesticides				
Aldrin	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
alpha-BHC	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
beta-BHC	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
delta-BHC	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
gamma-BHC	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
alpha-Chlordane	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
gamma-Chlordane	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
4,4'-DDD	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
4,4'-DDE	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
4,4'-DDT	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
Dieldrin	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
Endosulfan I	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
Endosulfan II	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
Endosulfan sulfate	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
Endrin	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
Endrin aldehyde	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
Endrin ketone	<0.07	0.07	EPA 600 03/14/95	EPA 8080 03/21/95
Heptachlor	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
Heptachlor epoxide	<0.03	0.03	EPA 600 03/14/95	EPA 8080 03/21/95
Methoxychlor	<0.3	0.3	EPA 600 03/14/95	EPA 8080 03/21/95
Technical chlordane	<0.2	0.2	EPA 600 03/14/95	EPA 8080 03/21/95
Toxaphene	<3	3	EPA 600 03/14/95	EPA 8080 03/21/95

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference#: 2T3054, T05-9502-002

Sample Identification: OWS1 Date Sampled: 03/07/95
Lab Number: 010b Date Received: 03/07/95
Sample Type: Waste/soil, brown, opaque, sludge
Analyst: LB

Analyte	Concentration (mg/kg)	LOD (mg/kg)	Preparation Method and Date	Analytical Method and Date
Metals				
Arsenic	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Barium	160	3	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Cadmium	7	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Chromium	35	3	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Copper	120	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Lead	1,200	3	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Mercury	0.13	0.01	EPA 7471 03/09/95	EPA 7471 03/10/95
Selenium	<3	3	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Silver	1.3	0.5	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Zinc	430	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95

General Notes

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on an "as received" basis.



ecology and environment, inc.

12251 UNIVERSAL TAYLOR MICHIGAN 48180 TEL. 313/946 0900

International Specialists in the Environment

M E M O R A N D U M

DATE: April 21, 1995

TO: Karen T. Smith, TAT Project Manager, E & E, Detroit, MI

FROM: Herbert B. Langer, TAT Chemical Engineer, E & E, Detroit, MI

THROUGH: Sandra L. Basham, ATATL, E & E, Detroit, MI *SB*
David Hendren, TAT Analytical Services Manager, E & E, Chicago, IL
Mary J. Ripp, TAT QA Reports Manager, E & E, Chicago, IL

SUBJECT: Flash Point and pH Analysis Data Quality Assurance Review,
Old World Trade Center, Detroit, Wayne County, Michigan

REFERENCE: Project TDD T05-9502-006 Analytical TDD T05-9502-802
Project PAN EMI1397SAA Analytical PAN EMI1397AAA

The data quality assurance (QA) review for the nine liquid, three solid, and two sludge samples, collected from the Old World Trade Center site, is complete. The samples were collected on March 6, 1995, and March 7, 1995, by the Technical Assistance Team (TAT) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to Clayton Environmental Laboratories, Novi, Michigan, for analysis. The laboratory analyses were performed according to United States Environmental Protection Agency (U.S. EPA) Solid Waste-846 (SW-846) Method 1010 for the determination of flash point and U.S. EPA Method 150.1 for pH.

Sample Identification

<u>E & E</u> <u>Identification No.</u>	<u>Laboratory</u> <u>Identification No.</u>
OWD2	24532.00 001c
OWD3	24532.00 002c
OWD5	24532.00 006c
OWD6	24532.00 005c
OWD8	24562.00 001a
OWD9	24562.00 006a
OWD10	24562.00 007a
OWD11	24562.00 002a
OWD12	24562.00 003a
OWD13	24562.00 004a

Sample Identification (con'd)

<u>E & E Identification No.</u>	<u>Laboratory Identification No.</u>
OWC1	24562.00 005c
OWP1	24562.00 008b
OWP2	24562.00 009a
OWS1	24562.00 010b

Data Qualifications

I. Sample Holding Time: Acceptable

The samples were collected by TAT and received by the laboratory March 6, 1995, and March 7, 1995. The analyses were completed March 20, 1995. The Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 does not include criteria regarding holding times for these methods.

II. Initial and Continuing Calibration Verification: Acceptable

Flash point calibrations were performed using p-xylene for the standard. The standard flashed at the appropriate temperature for the compound. The pH meter calibration was performed using buffers with pH of 4.0, 7.0, and 10.0. A continuing calibration was performed during the analytical run using a buffer with pH of 6.0.

III. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on the criteria outlined in the OSWER Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 9.0, Generic Data Validation Procedures, and Section 2.7, Quality Assurance Requirements. Based upon the information provided, the data are considered acceptable for use as reported.

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD2	Date Sampled:	03/06/95
Lab Number:	001c	Date Received:	03/06/95
Sample Type:	Liquid	Date Analyzed:	03/13/95
Analytical Method:	EPA 1010		
Analyst:	DT		

Analyte	Analytical Result
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Flashpoint	68°F
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General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD5	Date Sampled:	03/06/95
Lab Number:	006c	Date Received:	03/06/95
Sample Type:	Liquid	Date Analyzed:	03/09/95
Analytical Method:	EPA 150.1		
Analyst:	DT		

Analyte	Analytical Result
pH	1.8

General Notes:

<. Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD6	Date Sampled:	03/06/95
Lab Number:	005c	Date Received:	03/06/95
Sample Type:	Liquid	Date Analyzed:	03/13/95
Analytical Method:	EPA 1010		
Analyst:	DT		

Analyte	Analytical Result
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Flashpoint	≤72°F
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General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: ZT3054/T05-9502-002

Sample Identification:	OWD8	Date Sampled:	03/07/95
Lab Number:	001a	Date Received:	03/07/95
Sample Type:	Liquid	Date Analyzed:	03/20/95
Analytical Method:	EPA 1010		
Analyst:	DT		

Analyte	Analytical Result
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Flashpoint	≤40°F
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General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: ZT3054/T05-9502-002

Sample Identification:	OWD9	Date Sampled:	03/07/95
Lab Number:	006a	Date Received:	03/07/95
Sample Type:	Amber, clear, liquid; Light yellow, opaque, sludge	Date Analyzed:	03/15/95
Analytical Method:	EPA 1010		
Analyst:	DT		

Analyte	Analytical Result
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Flashpoint	>200°F
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General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: ZT3054/T05-9502-002

Sample Identification:	OWD10	Date Sampled:	03/07/95
Lab Number:	007a	Date Received:	03/07/95
Sample Type:	Liquid	Date Analyzed:	03/15/95
Analytical Method:	EPA 1010		
Analyst:	DT		

Analyte	Analytical Result
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Flashpoint	88°F
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General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: ZT3054/T05-9502-002

Sample Identification:	OWD11	Date Sampled:	03/07/95
Lab Number:	002a	Date Received:	03/07/95
Sample Type:	Liquid	Date Analyzed:	03/20/95
Analytical Method:	EPA 1010		
Analyst:	DT		

Analyte	Analytical Result
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Flashpoint	≤42°F
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General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: ZT3054/T05-9502-002

Sample Identification:	OWD12	Date Sampled:	03/07/95
Lab Number:	003a	Date Received:	03/07/95
Sample Type:	Liquid	Date Analyzed:	03/20/95
Analytical Method:	EPA 1010		
Analyst:	DT		

Analyte	Analytical Result
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Flashpoint	≤46°F
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General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: ZT3054/T05-9502-002

Sample Identification:	OWD13	Date Sampled:	03/07/95
Lab Number:	004a	Date Received:	03/07/95
Sample Type:	Liquid	Date Analyzed:	03/15/95
Analytical Method:	EPA 1010		
Analyst:	DT		

Analyte	Analytical Result
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Flashpoint	136°F
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General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: ZT3054/T05-9502-002

Sample Identification:	OWC1	Date Sampled:	03/07/95
Lab Number:	005c	Date Received:	03/07/95
Sample Type:	Solid	Date Analyzed:	03/17/95
Analytical Method:	EPA 1010		
Analyst:	DT		

Analyte	Analytical Result
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Flashpoint	50°F (a)
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(a) See case narrative

General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: ZT3054/T05-9502-002

Sample Identification:	OWP1	Date Sampled:	03/07/95
Lab Number:	008b	Date Received:	03/07/95
Sample Type:	Black, opaque, sludge	Date Analyzed:	03/16/95
Analytical Method:	EPA 1010		
Analyst:	DT		

Analyte	Analytical Result
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Flashpoint	130°F
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General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: ZT3054/T05-9502-002

Sample Identification:	OWP2	Date Sampled:	03/07/95
Lab Number:	009a	Date Received:	03/07/95
Sample Type:	Black, opaque, sludge	Date Analyzed:	03/16/95
Analytical Method:	EPA 1010		
Analyst:	DT		

Analyte	Analytical Result
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Flashpoint	>200°F
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General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: ZT3054/T05-9502-002

Sample Identification: OWS1 Date Sampled: 03/07/95
Lab Number: 010b Date Received: 03/07/95
Sample Type: Waste/soil, brown, opaque, sludge Date Analyzed: --
Analytical Method: EPA 1010
Analyst: DT

Analyte	Analytical Result
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Flashpoint	(a)
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(a) Unable to analyze for flashpoint due to sample matrix.

General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable



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M E M O R A N D U M

DATE: April 21, 1995

TO: Karen T. Smith, TAT Project Manager, E & E, Detroit, MI

FROM: Herbert B. Langer, TAT Chemical Engineer, E & E, Detroit, MI

THROUGH: Sandra L. Basham, ATATL, E & E, Detroit, MI *513*
David Hendren, TAT Analytical Services Manager, E & E, Chicago, IL
Mary J. Ripp, TAT QA Reports Manager, E & E, Chicago, IL

SUBJECT: Pesticide and Polychlorinated Biphenyl (PCB) Compound Analysis
Data Quality Assurance Review, Old World Trade Center,
Detroit, Wayne County, Michigan

REFERENCE: Project TDD T05-9502-006 Analytical TDD T05-9502-802
Project PAN EMI1397SAA Analytical PAN EMI1397AAA

The data quality assurance (QA) review for the two sludge and one solid samples, collected from the Old World Trade Center site, is complete. The samples were collected on March 7, 1995, by the Technical Assistance Team (TAT) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to Clayton Environmental Laboratories, Novi, Michigan, for analysis. The laboratory analyses were performed according to United States Environmental Protection Agency (U.S. EPA) Solid Waste-846 (SW-846) Method 8080 for the determination of pesticides and PCBs.

Sample Identification

<u>E & E</u> <u>Identification No.</u>	<u>Laboratory</u> <u>Identification No.</u>
OWP1	24562.00 008b
OWP2	24562.00 009c
OWS1	24562.00 010b

Data Qualifications

I. Sample Holding Time: Acceptable

The samples were collected and received by the laboratory on March 7, 1995. The samples were extracted March 14, 1995, and analyses were completed March 22, 1995. All activities were performed within the required holding times for the method and matrix (14 days to extraction, analyzed within 40 days after extraction).

II. Instrument Performance: Acceptable

Dichlorodiphenyltrichloroethane (DDT) standard retention times were greater than 12 minutes, as required. Peak resolution on the standard chromatograms was adequate. Retention time windows were reported and pesticide and PCB standards retention times fell within them. Percent differences between surrogate compound retention times were less than 0.3 percent, as required for the capillary columns used.

III. Initial and Continuing Calibration Verification: Acceptable

Initial calibration was performed with standards containing the target pesticides at three different concentrations, as required. A five point initial calibration was performed for each target Aroclor. The percent relative standard deviations for the initial calibrations were acceptable for all compounds except DDT. Since DDT was not detected in any of the samples, no action was required. Continuing calibrations were performed daily for each target pesticide and Aroclor. Percent differences between initial and continuing calibration response factors were less than fifteen, as required.

IV. Method Blank: Acceptable

A method blank was prepared and analyzed during each sample run. None of the target compounds were detected in the method blanks.

V. Optional Quality Control Analyses: Acceptable

A. Matrix Spike/Matrix Spike Duplicate (MS/MSD):

A MS and MSD were prepared and analyzed during the analytical run. They were prepared using the target pesticides and Aroclor 1248. Percent recoveries of the spike compounds and relative percent differences between MS and MSD results were within the laboratory's quality control guidelines.

B. Surrogate Recovery:

A total of two surrogate compounds were added to each sample, blank, MS, and MSD. The percent recoveries of the surrogate compounds were within the laboratory's quality control guidelines.

VI. Compound Identification: Acceptable

None of the target pesticides were detected in the samples. Aroclors were identified using the correct retention time windows and fingerprint patterns.

VII. Compound Quantitation and Reported Detection Limits: Acceptable

Sample concentrations and reported detection limits were correctly adjusted to reflect sample dilutions and matrix effects. The results are not reported on a dry weight basis.

VIII. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on the criteria as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 6.0, Pesticides/PCBs, Section 7.0, PCBs, and Section 2.7, Quality Assurance Requirements. Based upon the information provided, the data are acceptable for use as reported.

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference#: 2T3054, T05-9502-002

Clayton
ENVIRONMENTAL
CONSULTANTS

Sample Identification:	OWP1	Date Sampled:	03/07/95
Lab Number:	008b	Date Received:	03/07/95
Sample Type:	Black, opaque, sludge		
Analyst:	LB		

Analyte	Concentration (mg/L)	LOD (mg/L)	Preparation Method and Date		Analytical Method and Date	
Metals						
Arsenic	<1	1	EPA 3010A	03/14/95	EPA 6010A	03/18/95
Barium	1	1	EPA 3010A	03/14/95	EPA 6010A	03/18/95
Cadmium	<0.5	0.5	EPA 3010A	03/14/95	EPA 6010A	03/18/95
Chromium	<1	1	EPA 3010A	03/14/95	EPA 6010A	03/18/95
Copper	1	1	EPA 3010A	03/14/95	EPA 6010A	03/18/95
Lead	3	1	EPA 3010A	03/14/95	EPA 6010A	03/18/95
Mercury	<0.01	0.01	EPA 7470	03/09/95	EPA 7470	03/10/95
Selenium	<1	1	EPA 3010A	03/14/95	EPA 6010A	03/18/95
Silver	<0.2	0.2	EPA 3010A	03/14/95	EPA 6010A	03/18/95
Zinc	4	1	EPA 3010A	03/14/95	EPA 6010A	03/18/95
Pesticides						
Aldrin	<0.03	0.03	EPA 500	03/14/95	EPA 8080	03/21/95
alpha-BHC	<0.03	0.03	EPA 500	03/14/95	EPA 8080	03/21/95
beta-BHC	<0.03	0.03	EPA 500	03/14/95	EPA 8080	03/21/95
delta-BHC	<0.03	0.03	EPA 500	03/14/95	EPA 8080	03/21/95
gamma-BHC	<0.03	0.03	EPA 500	03/14/95	EPA 8080	03/21/95
alpha-Chlordane	<0.03	0.03	EPA 500	03/14/95	EPA 8080	03/21/95
gamma-Chlordane	<0.03	0.03	EPA 500	03/14/95	EPA 8080	03/21/95
4,4'-DDD	<0.07	0.07	EPA 500	03/14/95	EPA 8080	03/21/95
4,4'-DDE	<0.07	0.07	EPA 500	03/14/95	EPA 8080	03/21/95
4,4'-DDT	<0.07	0.07	EPA 500	03/14/95	EPA 8080	03/21/95
Dieldrin	<0.07	0.07	EPA 500	03/14/95	EPA 8080	03/21/95
Endosulfan I	<0.03	0.03	EPA 500	03/14/95	EPA 8080	03/21/95
Endosulfan II	<0.07	0.07	EPA 500	03/14/95	EPA 8080	03/21/95
Endosulfan sulfate	<0.07	0.07	EPA 500	03/14/95	EPA 8080	03/21/95
Endrin	<0.07	0.07	EPA 500	03/14/95	EPA 8080	03/21/95
Endrin aldehyde	<0.07	0.07	EPA 500	03/14/95	EPA 8080	03/21/95
Endrin ketone	<0.07	0.07	EPA 500	03/14/95	EPA 8080	03/21/95
Heptachlor	<0.03	0.03	EPA 500	03/14/95	EPA 8080	03/21/95
Heptachlor epoxide	<0.03	0.03	EPA 500	03/14/95	EPA 8080	03/21/95
Methoxychlor	<0.3	0.3	EPA 500	03/14/95	EPA 8080	03/21/95
Technical chlordane	<0.2	0.2	EPA 500	03/14/95	EPA 8080	03/21/95
Toxaphene	<3	3	EPA 500	03/14/95	EPA 8080	03/21/95

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference#: 2T3054, T05-9502-002

Sample Identification:	OWP1	Date Sampled:	03/07/95
Lab Number:	008b	Date Received:	03/07/95
Sample Type:	Black, opaque, sludge		
Analyst:	LB		

Analyte	Concentration (mg/L)	LOD (mg/L)	Preparation Method and Date		Analytical Method and Date	
Polychlorinated Biphenyls						
Aroclor-1016	<0.3	0.3	EPA 600	03/14/95	EPA 8080	03/21/95
Aroclor-1221	<0.3	0.3	EPA 600	03/14/95	EPA 8080	03/21/95
Aroclor-1232	<0.3	0.3	EPA 600	03/14/95	EPA 8080	03/21/95
Aroclor-1242	<0.3	0.3	EPA 600	03/14/95	EPA 8080	03/21/95
Aroclor-1248	<0.3	0.3	EPA 600	03/14/95	EPA 8080	03/21/95
Aroclor-1254	<0.3	0.3	EPA 600	03/14/95	EPA 8080	03/21/95
Aroclor-1260	<0.3	0.3	EPA 600	03/14/95	EPA 8080	03/21/95

General Notes

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference#: 2T3054, T05-9502-002

Sample Identification: OWP2 Date Sampled: 03/07/95
Lab Number: 009a Date Received: 03/07/95
Sample Type: Black, opaque, sludge
Analyst: LB

Analyte	Concentration (mg/L)	LOD (mg/L)	Preparation Method and Date	Analytical Method and Date
Metals				
Arsenic	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Barium	1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Cadmium	<0.5	0.5	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Chromium	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Copper	1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Lead	4	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Mercury	<0.01	0.01	EPA 7470 03/09/95	EPA 7470 03/10/95
Selenium	<1	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Silver	<0.2	0.2	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Zinc	7	1	EPA 3010A 03/14/95	EPA 6010A 03/18/95
Pesticides				
Aldrin	<0.03	0.03	EPA 500 03/14/95	EPA 8080 03/21/95
alpha-BHC	<0.03	0.03	EPA 500 03/14/95	EPA 8080 03/21/95
beta-BHC	<0.03	0.03	EPA 500 03/14/95	EPA 8080 03/21/95
delta-BHC	<0.03	0.03	EPA 500 03/14/95	EPA 8080 03/21/95
gamma-BHC	<0.03	0.03	EPA 500 03/14/95	EPA 8080 03/21/95
alpha-Chlordane	<0.03	0.03	EPA 500 03/14/95	EPA 8080 03/21/95
gamma-Chlordane	<0.03	0.03	EPA 500 03/14/95	EPA 8080 03/21/95
4,4'-DDD	<0.07	0.07	EPA 500 03/14/95	EPA 8080 03/21/95
4,4'-DDE	<0.07	0.07	EPA 500 03/14/95	EPA 8080 03/21/95
4,4'-DDT	<0.07	0.07	EPA 500 03/14/95	EPA 8080 03/21/95
Dieldrin	<0.07	0.07	EPA 500 03/14/95	EPA 8080 03/21/95
Endosulfan I	<0.03	0.03	EPA 500 03/14/95	EPA 8080 03/21/95
Endosulfan II	<0.07	0.07	EPA 500 03/14/95	EPA 8080 03/21/95
Endosulfan sulfate	<0.07	0.07	EPA 500 03/14/95	EPA 8080 03/21/95
Endrin	<0.07	0.07	EPA 500 03/14/95	EPA 8080 03/21/95
Endrin aldehyde	<0.07	0.07	EPA 500 03/14/95	EPA 8080 03/21/95
Endrin ketone	<0.07	0.07	EPA 500 03/14/95	EPA 8080 03/21/95
Heptachlor	<0.03	0.03	EPA 500 03/14/95	EPA 8080 03/21/95
Heptachlor epoxide	<0.03	0.03	EPA 500 03/14/95	EPA 8080 03/21/95
Methoxychlor	<0.3	0.3	EPA 500 03/14/95	EPA 8080 03/21/95
Technical chlordane	<0.2	0.2	EPA 500 03/14/95	EPA 8080 03/21/95
Toxaphene	<3	3	EPA 500 03/14/95	EPA 8080 03/21/95

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference#: 2T3054, T05-9502-002

Sample Identification:	OWP2	Date Sampled:	03/07/95
Lab Number:	009a	Date Received:	03/07/95
Sample Type:	Black, opaque, sludge		
Analyst:	LB		

Analyte	Concentration (mg/L)	LOD (mg/L)	Preparation Method and Date		Analytical Method and Date	
Polychlorinated Biphenyls						
Aroclor-1016	<0.3	0.3	EPA 600	03/14/95	EPA 8080	03/21/95
Aroclor-1221	<0.3	0.3	EPA 600	03/14/95	EPA 8080	03/21/95
Aroclor-1232	<0.3	0.3	EPA 600	03/14/95	EPA 8080	03/21/95
Aroclor-1242	<0.3	0.3	EPA 600	03/14/95	EPA 8080	03/21/95
Aroclor-1248	<0.3	0.3	EPA 600	03/14/95	EPA 8080	03/21/95
Aroclor-1254	<0.3	0.3	EPA 600	03/14/95	EPA 8080	03/21/95
Aroclor-1260	<0.3	0.3	EPA 600	03/14/95	EPA 8080	03/21/95

General Notes

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: ZT3054/T05-9502-002

Sample Identification:	OWS1	Date Sampled:	03/07/95
Lab Number:	010b	Date Received:	03/07/95
Sample Type:	Waste/soil, brown, opaque, sludge	Date Extracted:	03/14/95
Analytical Method:	EPA 8080	Date Analyzed:	03/22/95
Analyst:	LB		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Pesticides		
alpha-BHC	<2	2
beta-BHC	<2	2
delta-BHC	<2	2
gamma-BHC (Lindane)	<2	2
Heptachlor	<2	2
Aldrin	<2	2
Heptachlor Epoxide	<2	2
Endosulfan I	<2	2
Dieldrin	<4	4
4,4'-DDE	<4	4
Endrin	<4	4
Endosulfan II	<4	4
4,4'-DDD	<4	4
Endosulfan Sulfate	<4	4
4,4'-DDT	<4	4
Endrin Ketone	<4	4
Methoxychlor	<20	20
alpha-Chlordane	<2	2
gamma-Chlordane	<2	2
Toxaphene	<200	200
Endrin Aldehyde	<4	4
Polychlorinated Biphenyls		
Aroclor-1016	<40	40
Aroclor-1221	<80	80
Aroclor-1232	<40	40
Aroclor-1242	<40	40
Aroclor-1248	550	40
Aroclor-1254	450	40
Aroclor-1260	700	40

General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable



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M E M O R A N D U M

DATE: April 21, 1995

TO: Karen T. Smith, TAT Project Manager, E & E, Detroit, MI

FROM: Herbert B. Langer, TAT Chemical Engineer, E & E, Detroit, MI

THROUGH: Sandra L. Basham, ATATL, E & E, Detroit, MI *SLB*
David Hendren, TAT Analytical Services Manager, E & E, Chicago, IL
Mary J. Ripp, TAT QA Reports Manager, E & E, Chicago, IL

SUBJECT: Volatile Organic Analysis (VOA) Data Quality Assurance Review,
Old World Trade Center, Detroit, Wayne County, Michigan

REFERENCE: Project TDD T05-9502-006 Analytical TDD T05-9502-802
Project PAN EMI1397SAA Analytical PAN EMI1397AAA

The data quality assurance (QA) review for the nine liquid, two solid, and three sludge samples, collected from the Old World Trade Center site, is complete. The samples were collected on March 6, 1995, and March 7, 1995, by the Technical Assistance Team (TAT) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to Clayton Environmental Laboratories, Novi, Michigan, for analysis. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste-846 (SW-846) Method 8260, for the determination of volatile organic compounds.

Sample Identification

<u>E & E</u> <u>Identification No.</u>	<u>Laboratory</u> <u>Identification No.</u>
OWD2	24532.00 001a
OWD3	24532.00 002a
OWD4	24532.00 003a
OWD6	24532.00 005a
OWD7	24532.00 004a
OWD8	24562.00 001b
OWD10	24562.00 007b
OWD11	24562.00 002b
OWD12	24562.00 003b
OWD13	24562.00 004b
OWC1	24562.00 005b

Sample Identification (con'd)

<u>E & E</u> <u>Identification No.</u>	<u>Laboratory</u> <u>Identification No.</u>
OWP1	24562.00 008b
OWP2	24562.00 009b
OWS1	24562.00 010b

Data Qualifications

I. Sample Holding Time: Acceptable

The samples were collected by TAT and received by the laboratory March 6, 1995, and March 7, 1995. The sample analyses were completed March 17, 1995, within the required holding time for the method and matrices (14 days).

II. Gas Chromatography/Mass Spectrometry (GC/MS) Tuning: Acceptable

Bromofluorobenzene instrument tuning compound was run within twelve hours of each sample analysis, as required. All expanded ion abundance criteria were met.

III. Initial and Continuing Calibration Verification: Acceptable

Initial calibration was performed on the instrument used. Continuing calibrations were performed within twelve hours of each analysis. All initial calibration average response factors were greater than zero, as required. Continuing calibration relative response factors were greater than 0.05, as required.

Percent relative standard deviations between initial calibration response factors were less than 30 for detected compounds, as required. Percent differences between initial and continuing calibration response factors for detected compounds were less than 25, as required.

IV. Internal Standards: Acceptable

The percent differences between the internal standard areas for the daily standard and samples were within the required limits. Internal standard retention times were acceptable.

V. Method Blank: Acceptable

A method blank was prepared and analyzed during the sample run. Extraction blanks were prepared and analyzed with each extraction group. None of the target compounds were detected in the blanks.

VI. Optional Quality Control Analyses: Acceptable

A. Matrix Spike/Matrix Spike Duplicate (MS/MSD):

A MS and MSD were prepared and analyzed during the analytical run. The sample used to prepare the MS and MSD was not reported by the laboratory. Percent recoveries of the spike compounds and relative percent differences between MS and MSD results were within the laboratory's quality control guidelines.

B. Surrogate Recovery:

A total of three surrogate compounds were added to each sample, blank, MS, and MSD. The percent recoveries of the surrogate compounds were within the laboratory's quality control guidelines.

VII. Compound Identification: Acceptable

All response times for detected compounds were within 0.06 units of the daily standards, as required. All ions found in the samples were also present in the standards.

VIII. Compound Quantitation and Reported Detection Limits: Acceptable

The compound quantitation and reported detection limits have been correctly adjusted to reflect dilutions and matrix effects. Results are not reported on a dry weight basis.

IX. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on the criteria as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 5.0, VOAs by GC/MS Analysis, and Section 2.7, Quality Assurance Requirements. Based upon the information provided, the data are considered acceptable for use as reported.

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD2	Date Sampled:	03/06/95
Lab Number:	001a/A8845.D	Date Received:	03/06/95
Sample Type:	Oil	Date Prepared:	03/15/95
Preparation Method:	EPA 8260	Date Analyzed:	03/15/95
Analytical Method:	EPA 8260	Moisture(%):	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<250,000,000	250,000,000
Benzene	<25,000,000	25,000,000
Bromodichloromethane	<25,000,000	25,000,000
Bromoform	<25,000,000	25,000,000
Bromomethane	<25,000,000	25,000,000
2-Butanone	<250,000,000	250,000,000
Carbon disulfide	<250,000,000	250,000,000
Carbon tetrachloride	<25,000,000	25,000,000
Chlorobenzene	<25,000,000	25,000,000
Chloroethane	<25,000,000	25,000,000
Chloroform	<25,000,000	25,000,000
Chloromethane	<25,000,000	25,000,000
Dibromochloromethane	<25,000,000	25,000,000
1,2-Dichlorobenzene	<25,000,000	25,000,000
1,3-Dichlorobenzene	<25,000,000	25,000,000
1,4-Dichlorobenzene	<25,000,000	25,000,000
1,1-Dichloroethane	<25,000,000	25,000,000
1,2-Dichloroethane	<25,000,000	25,000,000
1,1-Dichloroethene	<25,000,000	25,000,000
cis-1,2-Dichloroethene	<25,000,000	25,000,000
trans-1,2-Dichloroethene	<25,000,000	25,000,000
1,2-Dichloropropane	<25,000,000	25,000,000
cis-1,3-Dichloropropene	<25,000,000	25,000,000
trans-1,3-Dichloropropene	<25,000,000	25,000,000
Ethylbenzene	<25,000,000	25,000,000
2-Hexanone	<250,000,000	250,000,000
Methylene chloride	<25,000,000	25,000,000
4-Methyl-2-pentanone	<250,000,000	250,000,000
Styrene	160,000,000	25,000,000
1,1,2,2-Tetrachloroethane	<25,000,000	25,000,000
Tetrachloroethene	<25,000,000	25,000,000
Toluene	<25,000,000	25,000,000

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD2	Date Sampled:	03/06/95
Lab Number:	001a/A8845.D	Date Received:	03/06/95
Sample Type:	Oil	Date Prepared:	03/15/95
Preparation Method:	EPA 8260	Date Analyzed:	03/15/95
Analytical Method:	EPA 8260	Moisture(%) :	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<25,000,000	25,000,000
1,1,2-Trichloroethane	<25,000,000	25,000,000
Trichloroethene	<25,000,000	25,000,000
Vinyl acetate	<25,000,000	25,000,000
Vinyl chloride	<25,000,000	25,000,000
Xylenes [total]	<75,000,000	75,000,000

(a): MDNR LOD'S could not be acheived due to the high concentration of one or more of the target list compounds.

General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a wet-weight basis.

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD3	Date Sampled:	03/06/95
Lab Number:	002a/A8851.D	Date Received:	03/06/95
Sample Type:	Oil	Date Prepared:	03/15/95
Preparation Method:	EPA 8260	Date Analyzed:	03/15/95
Analytical Method:	EPA 8260	Moisture(%):	--
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<40,000	40,000
Benzene	<4,000	4,000
Bromodichloromethane	<4,000	4,000
Bromoform	<4,000	4,000
Bromomethane	<4,000	4,000
2-Butanone	<40,000	40,000
Carbon disulfide	<40,000	40,000
Carbon tetrachloride	<4,000	4,000
Chlorobenzene	<4,000	4,000
Chloroethane	<4,000	4,000
Chloroform	<4,000	4,000
Chloromethane	<4,000	4,000
Dibromochloromethane	<4,000	4,000
1,2-Dichlorobenzene	<4,000	4,000
1,3-Dichlorobenzene	<4,000	4,000
1,4-Dichlorobenzene	<4,000	4,000
1,1-Dichloroethane	<4,000	4,000
1,2-Dichloroethane	<4,000	4,000
1,1-Dichloroethene	<4,000	4,000
cis-1,2-Dichloroethene	<4,000	4,000
trans-1,2-Dichloroethene	<4,000	4,000
1,2-Dichloropropane	<4,000	4,000
cis-1,3-Dichloropropene	<4,000	4,000
trans-1,3-Dichloropropene	<4,000	4,000
Ethylbenzene	<4,000	4,000
2-Hexanone	<40,000	40,000
Methylene chloride	<4,000	4,000
4-Methyl-2-pentanone	<40,000	40,000
Styrene	<4,000	4,000
1,1,2,2-Tetrachloroethane	<4,000	4,000
Tetrachloroethene	<4,000	4,000
Toluene	44,000	4,000

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD3	Date Sampled:	03/06/95
Lab Number:	002a/A8851.D	Date Received:	03/06/95
Sample Type:	Oil	Date Prepared:	03/15/95
Preparation Method:	EPA 8260	Date Analyzed:	03/15/95
Analytical Method:	EPA 8260	Moisture(%):	--
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<4,000	4,000
1,1,2-Trichloroethane	<4,000	4,000
Trichloroethene	<4,000	4,000
Vinyl acetate	<4,000	4,000
Vinyl chloride	<4,000	4,000
Xylenes [total]	<10,000	10,000

General Notes:

<: Less than the indicated limit of detection (LOD)
 --: Information not available or not applicable
 Results are reported on a wet-weight basis.

Analytical Results
for

ECOLOGY & ENVIRONMENT, INC
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD4	Date Sampled:	03/06/95
Lab Number:	003a/A8843.D	Date Received:	03/06/95
Sample Type:	Water	Date Prepared:	03/15/95
Preparation Method:	--	Date Analyzed:	03/15/95
Analytical Method:	EPA 8260		
Analyst:	TF		

Analyte	Concentration (a) (µg/L)	LCD (µg/L)
Volatile Compounds		
Acetone	<50,000	50,000
Benzene	<1,000	1,000
Bromodichloromethane	<1,000	1,000
Bromoform	<1,000	1,000
Bromomethane	<1,000	1,000
2-Butanone	<50,000	50,000
Carbon disulfide	<50,000	50,000
Carbon tetrachloride	<1,000	1,000
Chlorobenzene	<1,000	1,000
Chloroethane	<1,000	1,000
Chloroform	<1,000	1,000
Chloromethane	<1,000	1,000
Dibromochloromethane	<1,000	1,000
1,2-Dichlorobenzene	<1,000	1,000
1,3-Dichlorobenzene	<1,000	1,000
1,4-Dichlorobenzene	<1,000	1,000
1,1-Dichloroethane	<1,000	1,000
1,2-Dichloroethane	<1,000	1,000
1,1-Dichloroethene	<1,000	1,000
cis-1,2-Dichloroethene	<1,000	1,000
trans-1,2-Dichloroethene	<1,000	1,000
1,2-Dichloropropane	<1,000	1,000
cis-1,3-Dichloropropene	<1,000	1,000
trans-1,3-Dichloropropene	<1,000	1,000
Ethylbenzene	<1,000	1,000
2-Hexanone	<50,000	50,000
Methylene chloride	<1,000	1,000
4-Methyl-2-pentanone	<50,000	50,000
Styrene	<1,000	1,000
1,1,2,2-Tetrachloroethane	<1,000	1,000
Tetrachloroethene	<1,000	1,000
Toluene	<1,000	1,000

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD4	Date Sampled:	03/06/95
Lab Number:	003a/A8843.D	Date Received:	03/06/95
Sample Type:	Water	Date Prepared:	03/15/95
Preparation Method:	--	Date Analyzed:	03/15/95
Analytical Method:	EPA 8260		
Analyst:	TF		

Analyte	Concentration (a) (µg/L)	LOD (µg/L)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<1,000	1,000
1,1,2-Trichloroethane	<1,000	1,000
Trichloroethene	<1,000	1,000
Vinyl acetate	<1,000	1,000
Vinyl chloride	<1,000	1,000
Xylenes [total]	<3,000	3,000

(a): MDNR LOD'S could not be acheived due to matrix interference.

General Notes:

- <: Less than the indicated limit of detection (LOD)
- : Information not available or not applicable

Analytical Results
for

ECOLOGY & ENVIRONMENT, INC

Clayton Project No. 24532.00

Client Reference: ZT3054/TC5-9502-802

Sample Identification:	OWD6	Date Sampled:	03/06/95
Lab Number:	005a/A8847.D	Date Received:	03/06/95
Sample Type:	Oil	Date Prepared:	03/15/95
Preparation Method:	EPA 8260	Date Analyzed:	03/15/95
Analytical Method:	EPA 8260	Moisture(%):	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<25,000,000	25,000,000
Benzene	<2,500,000	2,500,000
Bromodichloromethane	<2,500,000	2,500,000
Bromoform	<2,500,000	2,500,000
Bromomethane	<2,500,000	2,500,000
2-Butanone	<25,000,000	25,000,000
Carbon disulfide	<25,000,000	25,000,000
Carbon tetrachloride	<2,500,000	2,500,000
Chlorobenzene	<2,500,000	2,500,000
Chloroethane	<2,500,000	2,500,000
Chloroform	<2,500,000	2,500,000
Chloromethane	<2,500,000	2,500,000
Dibromochloromethane	<2,500,000	2,500,000
1,2-Dichlorobenzene	<2,500,000	2,500,000
1,3-Dichlorobenzene	<2,500,000	2,500,000
1,4-Dichlorobenzene	<2,500,000	2,500,000
1,1-Dichloroethane	<2,500,000	2,500,000
1,2-Dichloroethane	<2,500,000	2,500,000
1,1-Dichloroethene	<2,500,000	2,500,000
cis-1,2-Dichloroethene	<2,500,000	2,500,000
trans-1,2-Dichloroethene	<2,500,000	2,500,000
1,2-Dichloropropane	<2,500,000	2,500,000
cis-1,3-Dichloropropene	<2,500,000	2,500,000
trans-1,3-Dichloropropene	<2,500,000	2,500,000
Ethylbenzene	4,000,000	2,500,000
2-Hexanone	<25,000,000	25,000,000
Methylene chloride	<2,500,000	2,500,000
4-Methyl-2-pentanone	<25,000,000	25,000,000
Styrene	<2,500,000	2,500,000
1,1,2,2-Tetrachloroethane	<2,500,000	2,500,000
Tetrachloroethene	<2,500,000	2,500,000
Toluene	58,000,000	2,500,000

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD6	Date Sampled:	03/06/95
Lab Number:	005a/A8847.D	Date Received:	03/06/95
Sample Type:	Oil	Date Prepared:	03/15/95
Preparation Method:	EPA 8260	Date Analyzed:	03/15/95
Analytical Method:	EPA 8260	Moisture(%)	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<2,500,000	2,500,000
1,1,2-Trichloroethane	5,000,000	2,500,000
Trichloroethene	<2,500,000	2,500,000
Vinyl acetate	<2,500,000	2,500,000
Vinyl chloride	<2,500,000	2,500,000
Xylenes [total]	12,000,000	7,500,000

(a): MDNR LOD'S could not be achieved due to the high concentration of one or more of the target list compounds.

General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a wet-weight basis.

Analytical Results

for

ECOLOGY & ENVIRONMENT, INC

Clayton Project No. 24532.00

Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD7	Date Sampled:	03/06/95
Lab Number:	004a/A8852.D	Date Received:	03/06/95
Sample Type:	Water	Date Prepared:	03/15/95
Preparation Method:	--	Date Analyzed:	03/15/95
Analytical Method:	EPA 8260		
Analyst:	TF		

Analyte	Concentration (µg/L)	LCD (µg/L)
Volatile Compounds		
Acetone	<50	50
Benzene	<1	1
Bromodichloromethane	<1	1
Bromoform	<1	1
Bromomethane	<1	1
2-Butanone	<50	50
Carbon disulfide	<50	50
Carbon tetrachloride	<1	1
Chlorobenzene	<1	1
Chloroethane	<1	1
Chloroform	11	1
Chloromethane	<1	1
Dibromochloromethane	<1	1
1,2-Dichlorobenzene	<1	1
1,3-Dichlorobenzene	<1	1
1,4-Dichlorobenzene	<1	1
1,1-Dichloroethane	<1	1
1,2-Dichloroethane	<1	1
1,1-Dichloroethene	<1	1
cis-1,2-Dichloroethene	<1	1
trans-1,2-Dichloroethene	<1	1
1,2-Dichloropropane	<1	1
cis-1,3-Dichloropropene	<1	1
trans-1,3-Dichloropropene	<1	1
Ethylbenzene	<1	1
2-Hexanone	<50	50
Methylene chloride	<1	1
4-Methyl-2-pentanone	<50	50
Styrene	34	1
1,1,2,2-Tetrachloroethane	<1	1
Tetrachloroethene	<1	1
Toluene	32	1

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Clayton
ENVIRONMENTAL
CONSULTANTS

Sample Identification:	OWD7	Date Sampled:	03/06/95
Lab Number:	004a/A8852.D	Date Received:	03/06/95
Sample Type:	Water	Date Prepared:	03/15/95
Preparation Method:	--	Date Analyzed:	03/15/95
Analytical Method:	EPA 8260		
Analyst:	TF		

Analyte	Concentration (µg/L)	LOD (µg/L)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<1	1
1,1,2-Trichloroethane	<1	1
Trichloroethene	<1	1
Vinyl acetate	<1	1
Vinyl chloride	<1	1
Xylenes [total]	<3	3

General Notes:

- <: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification:	OWD8	Date Sampled:	03/07/95
Lab Number:	001b/A8853.D	Date Received:	03/07/95
Sample Type:	Oil	Date Prepared:	03/15/95
Preparation Method:	EPA 8260	Date Analyzed:	03/15/95
Analytical Method:	EPA 8260	Moisture(%) :	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<125,000,000	125,000,000
Benzene	<12,500,000	12,500,000
Bromodichloromethane	<12,500,000	12,500,000
Bromoform	<12,500,000	12,500,000
Bromomethane	<12,500,000	12,500,000
2-Butanone	<125,000,000	125,000,000
Carbon disulfide	<125,000,000	125,000,000
Carbon tetrachloride	<12,500,000	12,500,000
Chlorobenzene	<12,500,000	12,500,000
Chloroethane	<12,500,000	12,500,000
Chloroform	<12,500,000	12,500,000
Chloromethane	<12,500,000	12,500,000
Dibromochloromethane	<12,500,000	12,500,000
1,2-Dichlorobenzene	<12,500,000	12,500,000
1,3-Dichlorobenzene	<12,500,000	12,500,000
1,4-Dichlorobenzene	<12,500,000	12,500,000
1,1-Dichloroethane	<12,500,000	12,500,000
1,2-Dichloroethane	<12,500,000	12,500,000
1,1-Dichloroethene	<12,500,000	12,500,000
cis-1,2-Dichloroethene	<12,500,000	12,500,000
trans-1,2-Dichloroethene	<12,500,000	12,500,000
1,2-Dichloropropane	<12,500,000	12,500,000
cis-1,3-Dichloropropene	<12,500,000	12,500,000
trans-1,3-Dichloropropene	<12,500,000	12,500,000
Ethylbenzene	<12,500,000	12,500,000
2-Hexanone	<125,000,000	125,000,000
Methylene chloride	<12,500,000	12,500,000
4-Methyl-2-pentanone	<125,000,000	125,000,000
Styrene	<12,500,000	12,500,000
1,1,2,2-Tetrachloroethane	<12,500,000	12,500,000
Tetrachloroethene	<12,500,000	12,500,000
Toluene	125,000,000	12,500,000

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification:	OWD8	Date Sampled:	03/07/95
Lab Number:	001b/A8853.D	Date Received:	03/07/95
Sample Type:	Oil	Date Prepared:	03/15/95
Preparation Method:	EPA 8260	Date Analyzed:	03/15/95
Analytical Method:	EPA 8260	Moisture(%):	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<12,500,000	12,500,000
1,1,2-Trichloroethane	<12,500,000	12,500,000
Trichloroethene	<12,500,000	12,500,000
Vinyl acetate	<12,500,000	12,500,000
Vinyl chloride	<12,500,000	12,500,000
Xylenes [total]	50,000,000	37,500,000

(a): MDNR LOD'S could not be acheived due to matrix interference.

General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Clayton
ENVIRONMENTAL
CONSULTANTS

Sample Identification: OWD10	Date Sampled: 03/07/95
Lab Number: 007b/A8884.D	Date Received: 03/07/95
Sample Type: Bulk	Date Prepared: 03/16/95
Preparation Method: EPA 8260	Date Analyzed: 03/16/95
Analytical Method: EPA 8260	Moisture(%): --
Analyst: TF	

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<125,000,000	125,000,000
Benzene	<12,500,000	12,500,000
Bromodichloromethane	<12,500,000	12,500,000
Bromoform	<12,500,000	12,500,000
Bromomethane	<12,500,000	12,500,000
2-Butanone	<125,000,000	125,000,000
Carbon disulfide	<125,000,000	125,000,000
Carbon tetrachloride	<12,500,000	12,500,000
Chlorobenzene	<12,500,000	12,500,000
Chloroethane	<12,500,000	12,500,000
Chloroform	<12,500,000	12,500,000
Chloromethane	<12,500,000	12,500,000
Dibromochloromethane	<12,500,000	12,500,000
1,2-Dichlorobenzene	<12,500,000	12,500,000
1,3-Dichlorobenzene	<12,500,000	12,500,000
1,4-Dichlorobenzene	<12,500,000	12,500,000
1,1-Dichloroethane	<12,500,000	12,500,000
1,2-Dichloroethane	<12,500,000	12,500,000
1,1-Dichloroethene	<12,500,000	12,500,000
cis-1,2-Dichloroethene	<12,500,000	12,500,000
trans-1,2-Dichloroethene	<12,500,000	12,500,000
1,2-Dichloropropane	<12,500,000	12,500,000
cis-1,3-Dichloropropene	<12,500,000	12,500,000
trans-1,3-Dichloropropene	<12,500,000	12,500,000
Ethylbenzene	50,000,000	12,500,000
2-Hexanone	<125,000,000	125,000,000
Methylene chloride	<12,500,000	12,500,000
4-Methyl-2-pentanone	<125,000,000	125,000,000
Styrene	<12,500,000	12,500,000
1,1,2,2-Tetrachloroethane	<12,500,000	12,500,000
Tetrachloroethene	<12,500,000	12,500,000
Toluene	110,000,000	12,500,000

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Clayton
ENVIRONMENTAL
CONSULTANTS

Sample Identification:	OWD10	Date Sampled:	03/07/95
Lab Number:	007b/A8884.D	Date Received:	03/07/95
Sample Type:	Bulk	Date Prepared:	03/16/95
Preparation Method:	EPA 8260	Date Analyzed:	03/16/95
Analytical Method:	EPA 8260	Moisture(%):	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LCD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<12,500,000	12,500,000
1,1,2-Trichloroethane	<12,500,000	12,500,000
Trichloroethene	<12,500,000	12,500,000
Vinyl acetate	<12,500,000	12,500,000
Vinyl chloride	<12,500,000	12,500,000
Xylenes [total]	201,000,000	37,500,000

(a): MDNR LOD'S could not be acheived due to matrix interference.

General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a wet-weight basis.

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification:	OWD11	Date Sampled:	03/07/95
Lab Number:	002b/A8849.D	Date Received:	03/07/95
Sample Type:	Oil	Date Prepared:	03/15/95
Preparation Method:	EPA 8260	Date Analyzed:	03/15/95
Analytical Method:	EPA 8260	Moisture(%) :	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<25,000,000	25,000,000
Benzene	<2,500,000	2,500,000
Bromodichloromethane	<2,500,000	2,500,000
Bromoform	<2,500,000	2,500,000
Bromomethane	<2,500,000	2,500,000
2-Butanone	<25,000,000	25,000,000
Carbon disulfide	<25,000,000	25,000,000
Carbon tetrachloride	<2,500,000	2,500,000
Chlorobenzene	<2,500,000	2,500,000
Chloroethane	<2,500,000	2,500,000
Chloroform	<2,500,000	2,500,000
Chloromethane	<2,500,000	2,500,000
Dibromochloromethane	<2,500,000	2,500,000
1,2-Dichlorobenzene	<2,500,000	2,500,000
1,3-Dichlorobenzene	<2,500,000	2,500,000
1,4-Dichlorobenzene	<2,500,000	2,500,000
1,1-Dichloroethane	<2,500,000	2,500,000
1,2-Dichloroethane	<2,500,000	2,500,000
1,1-Dichloroethene	<2,500,000	2,500,000
cis-1,2-Dichloroethene	<2,500,000	2,500,000
trans-1,2-Dichloroethene	<2,500,000	2,500,000
1,2-Dichloropropane	<2,500,000	2,500,000
cis-1,3-Dichloropropene	<2,500,000	2,500,000
trans-1,3-Dichloropropene	<2,500,000	2,500,000
Ethylbenzene	6,000,000	2,500,000
2-Hexanone	<25,000,000	25,000,000
Methylene chloride	<2,500,000	2,500,000
4-Methyl-2-pentanone	<25,000,000	25,000,000
Styrene	<2,500,000	2,500,000
1,1,2,2-Tetrachloroethane	<2,500,000	2,500,000
Tetrachloroethene	<2,500,000	2,500,000
Toluene	52,000,000	2,500,000

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification:	OWD11	Date Sampled:	03/07/95
Lab Number:	002b/A8849.D	Date Received:	03/07/95
Sample Type:	Oil	Date Prepared:	03/15/95
Preparation Method:	EPA 8260	Date Analyzed:	03/15/95
Analytical Method:	EPA 8260	Moisture(%):	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<2,500,000	2,500,000
1,1,2-Trichloroethane	<2,500,000	2,500,000
Trichloroethene	<2,500,000	2,500,000
Vinyl acetate	<2,500,000	2,500,000
Vinyl chloride	<2,500,000	2,500,000
Xylenes [total]	31,000,000	7,500,000

(a): MDNR LOD'S could not be acheived due to matrix interference.

General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a wet-weight basis.

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Clayton
ENVIRONMENTAL
CONSULTANTS

Sample Identification: OWD12	Date Sampled: 03/07/95
Lab Number: 003b/A8867.D	Date Received: 03/07/95
Sample Type: Oil	Date Prepared: 03/16/95
Preparation Method: EPA 8260	Date Analyzed: 03/16/95
Analytical Method: EPA 8260	Moisture(%): --
Analyst: TF	

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<300,000	300,000
Benzene	<30,000	30,000
Bromodichloromethane	<30,000	30,000
Bromoform	<30,000	30,000
Bromomethane	<30,000	30,000
2-Butanone	500,000	300,000
Carbon disulfide	<300,000	300,000
Carbon tetrachloride	<30,000	30,000
Chlorobenzene	<30,000	30,000
Chloroethane	<30,000	30,000
Chloroform	<30,000	30,000
Chloromethane	<30,000	30,000
Dibromochloromethane	<30,000	30,000
1,2-Dichlorobenzene	<30,000	30,000
1,3-Dichlorobenzene	<30,000	30,000
1,4-Dichlorobenzene	<30,000	30,000
1,1-Dichloroethane	<30,000	30,000
1,2-Dichloroethane	<30,000	30,000
1,1-Dichloroethene	<30,000	30,000
cis-1,2-Dichloroethene	<30,000	30,000
trans-1,2-Dichloroethene	<30,000	30,000
1,2-Dichloropropane	<30,000	30,000
cis-1,3-Dichloropropene	<30,000	30,000
trans-1,3-Dichloropropene	<30,000	30,000
Ethylbenzene	70,000	30,000
2-Hexanone	<300,000	300,000
Methylene chloride	<30,000	30,000
4-Methyl-2-pentanone	<300,000	300,000
Styrene	<30,000	30,000
1,1,2,2-Tetrachloroethane	<30,000	30,000
Tetrachloroethene	<30,000	30,000
Toluene	230,000	30,000

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification:	OWD12	Date Sampled:	03/07/95
Lab Number:	003b/A8867.D	Date Received:	03/07/95
Sample Type:	Oil	Date Prepared:	03/16/95
Preparation Method:	EPA 8260	Date Analyzed:	03/16/95
Analytical Method:	EPA 8260	Moisture(%):	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LCD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<30,000	30,000
1,1,2-Trichloroethane	<30,000	30,000
Trichloroethene	<30,000	30,000
Vinyl acetate	<30,000	30,000
Vinyl chloride	<30,000	30,000
Xylenes [total]	250,000	80,000

(a): MDNR LOD'S could not be achieved due to matrix interference.

General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a wet-weight basis.

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification:	OWC1	Date Sampled:	03/07/95
Lab Number:	005b/A8881.D	Date Received:	03/07/95
Sample Type:	Bulk	Date Prepared:	03/16/95
Preparation Method:	EPA 8260	Date Analyzed:	03/16/95
Analytical Method:	EPA 8260	Moisture(%):	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LCD (µg/kg)
Volatile Compounds		
Acetone	<100,000	100,000
Benzene	<10,000	10,000
Bromodichloromethane	<10,000	10,000
Bromoform	<10,000	10,000
Bromomethane	<10,000	10,000
2-Butanone	<100,000	100,000
Carbon disulfide	<100,000	100,000
Carbon tetrachloride	<10,000	10,000
Chlorobenzene	<10,000	10,000
Chloroethane	<10,000	10,000
Chloroform	<10,000	10,000
Chloromethane	<10,000	10,000
Dibromochloromethane	<10,000	10,000
1,2-Dichlorobenzene	<10,000	10,000
1,3-Dichlorobenzene	<10,000	10,000
1,4-Dichlorobenzene	<10,000	10,000
1,1-Dichloroethane	<10,000	10,000
1,2-Dichloroethane	<10,000	10,000
1,1-Dichloroethene	<10,000	10,000
cis-1,2-Dichloroethene	<10,000	10,000
trans-1,2-Dichloroethene	<10,000	10,000
1,2-Dichloropropane	<10,000	10,000
cis-1,3-Dichloropropene	<10,000	10,000
trans-1,3-Dichloropropene	<10,000	10,000
Ethylbenzene	60,000	10,000
2-Hexanone	<100,000	100,000
Methylene chloride	<10,000	10,000
4-Methyl-2-pentanone	<100,000	100,000
Styrene	<10,000	10,000
1,1,2,2-Tetrachloroethane	<10,000	10,000
Tetrachloroethene	<10,000	10,000
Toluene	20,000	10,000

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification:	OWD13	Date Sampled:	03/07/95
Lab Number:	004b/A8870.D	Date Received:	03/07/95
Sample Type:	Oil	Date Prepared:	03/16/95
Preparation Method:	EPA 8260	Date Analyzed:	03/16/95
Analytical Method:	EPA 8260	Moisture(%):	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10,000	10,000
1,1,2-Trichloroethane	<10,000	10,000
Trichloroethene	<10,000	10,000
Vinyl acetate	<10,000	10,000
Vinyl chloride	<10,000	10,000
Xylenes [total]	380,000	40,000

(a): MDNR LOD'S could not be acheived due to matrix interference.

General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a wet-weight basis.

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification:	OWD13	Date Sampled:	03/07/95
Lab Number:	004b/A8870.D	Date Received:	03/07/95
Sample Type:	Oil	Date Prepared:	03/16/95
Preparation Method:	EPA 8260	Date Analyzed:	03/16/95
Analytical Method:	EPA 8260	Moisture(%)	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100,000	100,000
Benzene	<10,000	10,000
Bromodichloromethane	<10,000	10,000
Bromoform	<10,000	10,000
Bromomethane	<10,000	10,000
2-Butanone	<100,000	100,000
Carbon disulfide	<100,000	100,000
Carbon tetrachloride	<10,000	10,000
Chlorobenzene	<10,000	10,000
Chloroethane	<10,000	10,000
Chloroform	<10,000	10,000
Chloromethane	<10,000	10,000
Dibromochloromethane	<10,000	10,000
1,2-Dichlorobenzene	<10,000	10,000
1,3-Dichlorobenzene	<10,000	10,000
1,4-Dichlorobenzene	<10,000	10,000
1,1-Dichloroethane	<10,000	10,000
1,2-Dichloroethane	<10,000	10,000
1,1-Dichloroethene	<10,000	10,000
cis-1,2-Dichloroethene	<10,000	10,000
trans-1,2-Dichloroethene	<10,000	10,000
1,2-Dichloropropane	<10,000	10,000
cis-1,3-Dichloropropene	<10,000	10,000
trans-1,3-Dichloropropene	<10,000	10,000
Ethylbenzene	20,000	10,000
2-Hexanone	<100,000	100,000
Methylene chloride	<10,000	10,000
4-Methyl-2-pentanone	<100,000	100,000
Styrene	<10,000	10,000
1,1,2,2-Tetrachloroethane	<10,000	10,000
Tetrachloroethene	<10,000	10,000
Toluene	20,000	10,000

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification:	OWC1	Date Sampled:	03/07/95
Lab Number:	005b/A8881.D	Date Received:	03/07/95
Sample Type:	Bulk	Date Prepared:	03/16/95
Preparation Method:	EPA 8260	Date Analyzed:	03/16/95
Analytical Method:	EPA 8260	Moisture(%):	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10,000	10,000
1,1,2-Trichloroethane	<10,000	10,000
Trichloroethene	<10,000	10,000
Vinyl acetate	<10,000	10,000
Vinyl chloride	<10,000	10,000
Xylenes [total]	220,000	40,000

(a): MDNR LOD'S could not be acheived due to matrix interference.

General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a wet-weight basis.

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification:	OWP1	Date Sampled:	03/07/95
Lab Number:	008b/A8886.D	Date Received:	03/07/95
Sample Type:	Black, opaque, Sludge	Date Prepared:	03/16/95
Preparation Method:	EPA 8260	Date Analyzed:	03/16/95
Analytical Method:	EPA 8260	Moisture(%):	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<60,000	60,000
Benzene	<6,000	6,000
Bromodichloromethane	<6,000	6,000
Bromoform	<6,000	6,000
Bromomethane	<6,000	6,000
2-Butanone	<60,000	60,000
Carbon disulfide	<60,000	60,000
Carbon tetrachloride	<6,000	6,000
Chlorobenzene	<6,000	6,000
Chloroethane	<6,000	6,000
Chloroform	<6,000	6,000
Chloromethane	<6,000	6,000
Dibromochloromethane	<6,000	6,000
1,2-Dichlorobenzene	<6,000	6,000
1,3-Dichlorobenzene	<6,000	6,000
1,4-Dichlorobenzene	<6,000	6,000
1,1-Dichloroethane	<6,000	6,000
1,2-Dichloroethane	<6,000	6,000
1,1-Dichloroethene	<6,000	6,000
cis-1,2-Dichloroethene	<6,000	6,000
trans-1,2-Dichloroethene	<6,000	6,000
1,2-Dichloropropane	<6,000	6,000
cis-1,3-Dichloropropene	<6,000	6,000
trans-1,3-Dichloropropene	<6,000	6,000
Ethylbenzene	27,000	6,000
2-Hexanone	<60,000	60,000
Methylene chloride	<6,000	6,000
4-Methyl-2-pentanone	<60,000	60,000
Styrene	<6,000	6,000
1,1,2,2-Tetrachloroethane	<6,000	6,000
Tetrachloroethene	<6,000	6,000
Toluene	<6,000	6,000

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification:	OWP1	Date Sampled:	03/07/95
Lab Number:	008b/A8886.D	Date Received:	03/07/95
Sample Type:	Black, opaque, Sludge	Date Prepared:	03/16/95
Preparation Method:	EPA 8260	Date Analyzed:	03/16/95
Analytical Method:	EPA 8260	Moisture(%):	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<6,000	6,000
1,1,2-Trichloroethane	<6,000	6,000
Trichloroethene	<6,000	6,000
Vinyl acetate	<6,000	6,000
Vinyl chloride	<6,000	6,000
Xylenes [total]	140,000	20,000

(a): MDNR LOD'S could not be acheived due to matrix interference.

General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a wet-weight basis.

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification:	OWP2	Date Sampled:	03/07/95
Lab Number:	009b/C7139.D	Date Received:	03/07/95
Sample Type:	Black, opaque, Sludge	Date Prepared:	03/17/95
Preparation Method:	EPA 8260	Date Analyzed:	03/17/95
Analytical Method:	EPA 8260	Moisture(%):	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<10,000	10,000
Benzene	<1,000	1,000
Bromodichloromethane	<1,000	1,000
Bromoform	<1,000	1,000
Bromomethane	<1,000	1,000
2-Butanone	<10,000	10,000
Carbon disulfide	<10,000	10,000
Carbon tetrachloride	<1,000	1,000
Chlorobenzene	<1,000	1,000
Chloroethane	<1,000	1,000
Chloroform	<1,000	1,000
Chloromethane	<1,000	1,000
Dibromochloromethane	<1,000	1,000
1,2-Dichlorobenzene	<1,000	1,000
1,3-Dichlorobenzene	<1,000	1,000
1,4-Dichlorobenzene	<1,000	1,000
1,1-Dichloroethane	<1,000	1,000
1,2-Dichloroethane	<1,000	1,000
1,1-Dichloroethene	<1,000	1,000
cis-1,2-Dichloroethene	<1,000	1,000
trans-1,2-Dichloroethene	<1,000	1,000
1,2-Dichloropropane	<1,000	1,000
cis-1,3-Dichloropropene	<1,000	1,000
trans-1,3-Dichloropropene	<1,000	1,000
Ethylbenzene	<1,000	1,000
2-Hexanone	<10,000	10,000
Methylene chloride	<1,000	1,000
4-Methyl-2-pentanone	<10,000	10,000
Styrene	<1,000	1,000
1,1,2,2-Tetrachloroethane	<1,000	1,000
Tetrachloroethene	<1,000	1,000
Toluene	<1,000	1,000

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification: OWP2	Date Sampled: 03/07/95
Lab Number: 009b/C7139.D	Date Received: 03/07/95
Sample Type: Black, opaque, Sludge	Date Prepared: 03/17/95
Preparation Method: EPA 8260	Date Analyzed: 03/17/95
Analytical Method: EPA 8260	Moisture(%): --
Analyst: TF	

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<1,000	1,000
1,1,2-Trichloroethane	<1,000	1,000
Trichloroethene	<1,000	1,000
Vinyl acetate	<1,000	1,000
Vinyl chloride	<1,000	1,000
Xylenes [total]	<4,000	4,000

(a): MDNR LOD'S could not be acheived due to matrix interference.

General Notes:

<: Less than the indicated limit of detection (LOD)
 --: Information not available or not applicable
 Results are reported on a wet-weight basis.

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification: OWS1 Date Sampled: 03/07/95
Lab Number: 010b/C7137.D Date Received: 03/07/95
Sample Type: Waste/soil, brown, opaque, Sludge Date Prepared: 03/17/95
Preparation Method: EPA 8260 Date Analyzed: 03/17/95
Analytical Method: EPA 8260 Moisture(%): --
Analyst: TF

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<30,000	30,000
Benzene	<3,000	3,000
Bromodichloromethane	<3,000	3,000
Bromoform	<3,000	3,000
Bromomethane	<3,000	3,000
2-Butanone	<30,000	30,000
Carbon disulfide	<30,000	30,000
Carbon tetrachloride	<3,000	3,000
Chlorobenzene	<3,000	3,000
Chloroethane	<3,000	3,000
Chloroform	<3,000	3,000
Chloromethane	<3,000	3,000
Dibromochloromethane	<3,000	3,000
1,2-Dichlorobenzene	<3,000	3,000
1,3-Dichlorobenzene	<3,000	3,000
1,4-Dichlorobenzene	<3,000	3,000
1,1-Dichloroethane	<3,000	3,000
1,2-Dichloroethane	<3,000	3,000
1,1-Dichloroethene	<3,000	3,000
cis-1,2-Dichloroethene	<3,000	3,000
trans-1,2-Dichloroethene	<3,000	3,000
1,2-Dichloropropane	<3,000	3,000
cis-1,3-Dichloropropene	<3,000	3,000
trans-1,3-Dichloropropene	<3,000	3,000
Ethylbenzene	<3,000	3,000
2-Hexanone	<30,000	30,000
Methylene chloride	<3,000	3,000
4-Methyl-2-pentanone	<30,000	30,000
Styrene	<3,000	3,000
1,1,2,2-Tetrachloroethane	<3,000	3,000
Tetrachloroethene	<3,000	3,000
Toluene	4,000	3,000

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24562.00
Client Reference: 273054, T05-9502-002

Sample Identification:	OWS1	Date Sampled:	03/07/95
Lab Number:	010b/C7137.D	Date Received:	03/07/95
Sample Type:	Waste/soil, brown, opaque, Sludge	Date Prepared:	03/17/95
Preparation Method:	EPA 8260	Date Analyzed:	03/17/95
Analytical Method:	EPA 8260	Moisture(%) :	--
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<3,000	3,000
1,1,2-Trichloroethane	<3,000	3,000
Trichloroethene	<3,000	3,000
Vinyl acetate	<3,000	3,000
Vinyl chloride	<3,000	3,000
Xylenes [total]	12,000	8,000

(a): MDNR LOD'S could not be acheived due to matrix interference.

General Notes:

<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a wet-weight basis.



ecology and environment, inc.

12251 UNIVERSAL TAYLOR, MICHIGAN 48180, TEL. (313) 946-0900

International Specialists in the Environment

MEMORANDUM

DATE: April 21, 1995

TO: Karen T. Smith, TAT Project Manager, E & E, Detroit, MI

FROM: Herbert B. Langer, TAT Chemical Engineer, E & E, Detroit, MI

THROUGH: Sandra L. Basham, ATATL, E & E, Detroit, MI *SAB*
David Hendren, TAT Analytical Services Manager, E & E, Chicago, IL
Mary J. Ripp, TAT QA Reports Manager, E & E, Chicago, IL

SUBJECT: Semivolatile Organic Compound Analysis Data Quality Assurance Review,
Old World Trade Center, Detroit, Wayne County, Michigan

REFERENCE: Project TDD T05-9502-006 Analytical TDD T05-9502-802
Project PAN EMI1397SAA Analytical PAN EMI1397AAA

The data quality assurance (QA) review for the two liquid samples, collected from the Old World Trade Center site, is complete. The samples were collected on March 6, 1995, by the Technical Assistance Team (TAT) contractor, Ecology and Environment, Inc. (E & E). The samples were submitted to Clayton Environmental Laboratories, Novi, Michigan, for analysis. The laboratory analyses were performed according to the United States Environmental Protection Agency (U.S. EPA) Solid Waste-846 (SW-846) Method 8270, for the determination of semivolatile organic compounds.

Sample Identification

<u>E & E</u> <u>Identification No.</u>	<u>Laboratory</u> <u>Identification No.</u>
OWD4	24532.00 003b
OWD7	24532.00 004b

Data Qualifications

I. Sample Holding Time: Acceptable

The samples were collected March 6, 1995, and received by the laboratory on March 6, 1995. The samples were extracted March 13, 1995, and analyses were completed March 23, 1995. All activities were performed

within the required holding times for the method and matrix (14 days to extraction, analyzed within 40 days after extraction).

II. Gas Chromatography/Mass Spectrometry (GC/MS) Tuning: Acceptable

Decafluorotriphenylphosphine instrument tuning compound was run within twelve hours of each sample analysis, as required. All expanded ion abundance criteria were met.

III. Initial and Continuing Calibration Verification: Acceptable

Initial calibration was performed on the instrument used. Continuing calibration was performed within twelve hours of each analysis. All initial calibration average response factors were greater than zero, as required. Continuing calibration relative response factors were greater than 0.05, as required.

The percent relative standard deviations between calibration response factors were less than 30, for most target compounds. Percent differences between initial and continuing calibration response factors for most target compounds were less than 25. Compounds that did not meet initial and continuing calibration requirements were not detected in the samples, so qualification of the data was not required.

IV. Internal Standards: Acceptable

The percent difference between the internal standard areas for the daily standards and samples were within the required limits except for perylene. Internal standard retention times were acceptable. Since none of the target compounds were detected in the samples, no action was taken.

V. Method Blank: Acceptable

A method blank was prepared and analyzed during the sample run. None of the target compounds were detected in the method blank.

VI. Optional Quality Control Analyses: Qualified

A total of eight surrogate compounds were added to each sample and blank. The percent recoveries of the surrogate compounds did not meet the laboratory's quality control guidelines. None of the surrogate recoveries were above the recommended minimum of 10 percent for acid extractable compounds. The laboratory reported that chemical reactions and compound precipitation occurred when acidifying the sample matrices and interfered with surrogate compound recoveries. The chemical

reactions and compound precipitation may have interfered with other acid extractable compound detections, so acid extractable data has been qualified R, and rejected.

VII. Compound Identification: Acceptable

Since none of the target compounds were detected, internal standard retention times were used to verify the instruments compound identification capabilities. All internal standard response times were within 0.06 units of the daily standards, as required.

VIII. Compound Quantitation and Reported Detection Limits: Acceptable

Sample dilutions were required to correct for matrix interference. Because none of the target compounds were detected, the laboratory performed infrared (IR) scans on the samples to determine the cause of the interference. The IR scans indicated that the interferences were the result of ammonia and sulfate compounds in the samples that caused chemical reactions and compound precipitation. Reported detection limits correctly reflect these sample dilutions and matrix effects.

IX. Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on the criteria outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 4.0, BNAs by GC/MS Analysis, and Section 2.7, Quality Assurance Requirements. Based upon the information provided, the data are considered acceptable for use as reported, with the above stated qualifications.

Data Qualifiers and Definitions

R - The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Any reported value is unusable. Resampling and/or reanalysis is necessary for verification.

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD4	Date Sampled:	03/06/95
Lab Number:	003b/E5786.D	Date Received:	03/06/95
Sample Type:	Water	Date Prepared:	03/15/95
Preparation Method:	EPA 3510A	Date Analyzed:	03/23/95
Analytical Method:	EPA 8270		
Analyst:	TF		

Analyte	Concentration (a) (µg/L)	LOD (µg/L)
Base Neutral Compounds		
Acenaphthene	<10,000	10,000
Acenaphthylene	<10,000	10,000
Anthracene	<10,000	10,000
Benzo[a]anthracene	<10,000	10,000
Benzo[a]pyrene	<10,000	10,000
Benzo[b]fluoranthene	<10,000	10,000
Benzo[g,h,i]perylene	<10,000	10,000
Benzo[k]fluoranthene	<10,000	10,000
bis(2-chloroethoxy)methane	<10,000	10,000
bis(2-chloroethyl)ether	<10,000	10,000
2,2'-Oxybis(1-chloropropane)	<10,000	10,000
bis(2-ethylhexyl)phthalate	<10,000	10,000
4-Bromophenyl-phenylether	<10,000	10,000
Butylbenzylphthalate	<10,000	10,000
4-Chloroaniline	<10,000	10,000
2-Chloronaphthalene	<10,000	10,000
4-Chlorophenyl-phenylether	<10,000	10,000
Chrysene	<10,000	10,000
Di-n-butylphthalate	<10,000	10,000
Di-n-octylphthalate	<10,000	10,000
Dibenzo[a,h]anthracene	<10,000	10,000
Dibenzofuran	<10,000	10,000
3,3'-Dichlorobenzidine	<10,000	10,000
Diethylphthalate	<10,000	10,000
Dimethylphthalate	<10,000	10,000
2,4-Dinitrotoluene	<10,000	10,000
2,6-Dinitrotoluene	<10,000	10,000
Fluoranthene	<10,000	10,000
Fluorene	<10,000	10,000
Hexachlorobenzene	<10,000	10,000
Hexachlorobutadiene	<10,000	10,000
Hexachlorocyclopentadiene	<10,000	10,000
Hexachloroethane	<10,000	10,000
Indeno[1,2,3-cd]pyrene	<10,000	10,000
Isophorone	<10,000	10,000
2-Methylnaphthalene	<10,000	10,000
2-Nitroaniline	<40,000	40,000
3-Nitroaniline	<40,000	40,000

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD4	Date Sampled:	03/06/95
Lab Number:	003b/E5786.D	Date Received:	03/06/95
Sample Type:	Water	Date Prepared:	03/15/95
Preparation Method:	EPA 3510A	Date Analyzed:	03/23/95
Analytical Method:	EPA 8270		
Analyst:	TF		

Analyte	Concentration (a) (µg/L)	LOD (µg/L)
Base Neutral Compounds (continued)		
4-Nitroaniline	<40,000	40,000
N-Nitroso-di-n-propylamine	<10,000	10,000
N-Nitrosodiphenylamine	<10,000	10,000
Naphthalene	<10,000	10,000
Nitrobenzene	<10,000	10,000
Phenanthrene	<10,000	10,000
Pyrene	<10,000	10,000
1,2,4-Trichlorobenzene	<10,000	10,000
Acid Compounds		
4-Chloro-3-methylphenol	<10,000	10,000
2-Chlorophenol	<10,000	10,000
2,4-Dichlorophenol	<10,000	10,000
2,4-Dimethylphenol	<10,000	10,000
4,6-Dinitro-2-methylphenol	<40,000	40,000
2,4-Dinitrophenol	<40,000	40,000
2-Methylphenol	<10,000	10,000
4-Methylphenol	<10,000	10,000
2-Nitrophenol	<10,000	10,000
4-Nitrophenol	<40,000	40,000
Pentachlorophenol	<40,000	40,000
Phenol	<10,000	10,000
2,4,5-Trichlorophenol	<40,000	40,000
2,4,6-Trichlorophenol	<10,000	10,000

(a): High limits of detection are due to matrix interference.

General Notes:

- <: Less than the indicated limit of detection (LOD)
- : Information not available or not applicable

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD7	Date Sampled:	03/06/95
Lab Number:	004b/E5792.D, E5814.D	Date Received:	03/06/95
Sample Type:	Water	Date Prepared:	03/15/95
Preparation Method:	EPA 3510A	Date Analyzed:	03/23/95
Analytical Method:	EPA 8270		
Analyst:	TF		

Analyte	Concentration (a) (µg/L)	LOD (µg/L)
Base Neutral Compounds		
Acenaphthene	<100	100
Acenaphthylene	<100	100
Anthracene	<100	100
Benzo[a]anthracene	<100	100
Benzo[a]pyrene	<2,000 (c)	2,000
Benzo[b]fluoranthene	<2,000 (c)	2,000
Benzo[g,h,i]perylene	<2,000 (c)	2,000
Benzo[k]fluoranthene	<2,000 (c)	2,000
bis(2-chloroethoxy)methane	<100	100
bis(2-chloroethyl)ether	<100	100
2,2'-Oxybis(1-chloropropane)	<100	100
bis(2-ethylhexyl)phthalate	<100	100
4-Bromophenyl-phenylether	<100	100
Butylbenzylphthalate	<100	100
4-Chloroaniline	<100	100
2-Chloronaphthalene	<100	100
4-Chlorophenyl-phenylether	<100	100
Chrysene	<100	100
Di-n-butylphthalate	<100	100
Di-n-octylphthalate	<2,000 (c)	2,000
Dibenzo[a,h]anthracene	<2,000 (c)	2,000
Dibenzofuran	<100	100
3,3'-Dichlorobenzidine	<100	100
Diethylphthalate	<100	100
Dimethylphthalate	<100	100
2,4-Dinitrotoluene	<100	100
2,6-Dinitrotoluene	<100	100
Fluoranthene	<100	100
Fluorene	<100	100
Hexachlorobenzene	<100	100
Hexachlorobutadiene	<100	100
Hexachlorocyclopentadiene	<100	100
Hexachloroethane	<100	100
Indeno[1,2,3-cd]pyrene	<2,000 (c)	2,000
Isophorone	<100	100
2-Methylnaphthalene	<100	100
2-Nitroaniline	<400	400
3-Nitroaniline	<400	400

Analytical Results
for
ECOLOGY & ENVIRONMENT, INC.
Clayton Project No. 24532.00
Client Reference: ZT3054/T05-9502-802

Sample Identification:	OWD7	Date Sampled:	03/06/95
Lab Number:	004b/ES792.D, E5814.D	Date Received:	03/06/95
Sample Type:	Water	Date Prepared:	03/15/95
Preparation Method:	EPA 3510A	Date Analyzed:	03/23/95
Analytical Method:	EPA 8270		
Analyst:	TF		

Analyte	Concentration (a) (µg/L)	LOD (µg/L)
Base Neutral Compounds (continued)		
4-Nitroaniline	<400	400
N-Nitroso-di-n-propylamine	<100	100
N-Nitrosodiphenylamine	<100	100
Naphthalene	<100	100
Nitrobenzene	<100	100
Phenanthrene	<100	100
Pyrene	<100	100
1,2,4-Trichlorobenzene	<100	100
Acid Compounds		
4-Chloro-3-methylphenol	<100 (b)	100
2-Chlorophenol	<100 (b)	100
2,4-Dichlorophenol	<100 (b)	100
2,4-Dimethylphenol	<100 (b)	100
4,6-Dinitro-2-methylphenol	<400 (b)	400
2,4-Dinitrophenol	<400 (b)	400
2-Methylphenol	<100 (b)	100
4-Methylphenol	<100 (b)	100
2-Nitrophenol	<100 (b)	100
4-Nitrophenol	<400 (b)	400
Pentachlorophenol	<400 (b)	400
Phenol	<100 (b)	100
2,4,5-Trichlorophenol	<400 (b)	400
2,4,6-Trichlorophenol	<100 (b)	100

- (a): High limits of detection are due to matrix interference.
 (b): Concentrations are estimated due to zero percent acid surrogate compound recoveries.
 (c): Please note that the internal standard area was outside the acceptance criteria. This does not effect the value reported.

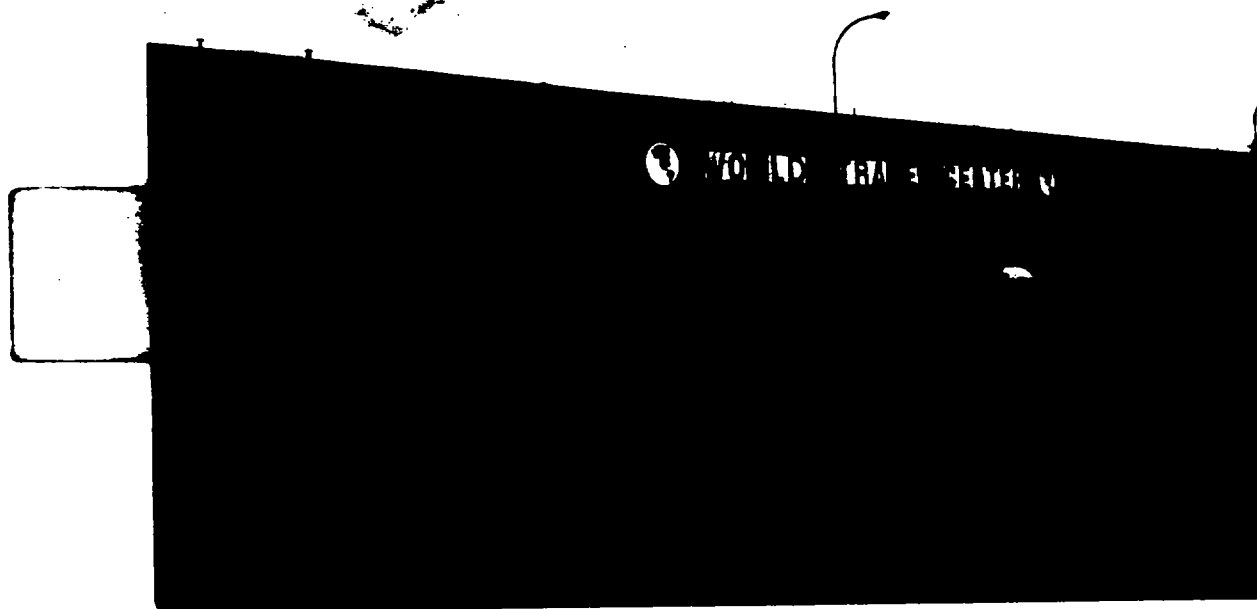
General Notes:

- <: Less than the indicated limit of detection (LOD)
 --: Information not available or not applicable



Site: Old World Trade Center
 Photo No: 1
 Direction: East
 Camera: Fuji Discovery
 Photographer: D.L.Anderson

Date: February 24, 1995
 Subject: View of the parking
 lot area at the Old World Trade
 Center.



Site: Old World Trade Center
 Photo No: 2
 Direction: Southeast
 Camera: Fuji Discovery
 Photographer: D.L.Anderson

Date: February 24, 1995
 Subject: View of one building
 comprising the Old World Trade
 Center.



Site: Old World Trade Center
 Photo No: 3
 Direction: East
 Camera: Minolta SPxi
 Photographer: M.L.Dieckhaus

Date: March 20, 1995
 Subject: View of a stray dog
 walking on the east side of the
 facility.



Site: Old World Trade Center
 Photo No: 4
 Direction: Southwest
 Camera: Minolta SPxi
 Photographer: M.L.Dieckhaus

Date: March 20, 1995
 Subject: View of improperly
 stored containers.



Site: Old World Trade Center
 Photo No: 5
 Direction: East
 Camera: Olympus Infinity
 Photographer: K.T.Smith

Date: February 24, 1995
 Subject: View of drum grouping
 number 1 in Area 1, note the
 poor condition of the drums
 stored in this area.



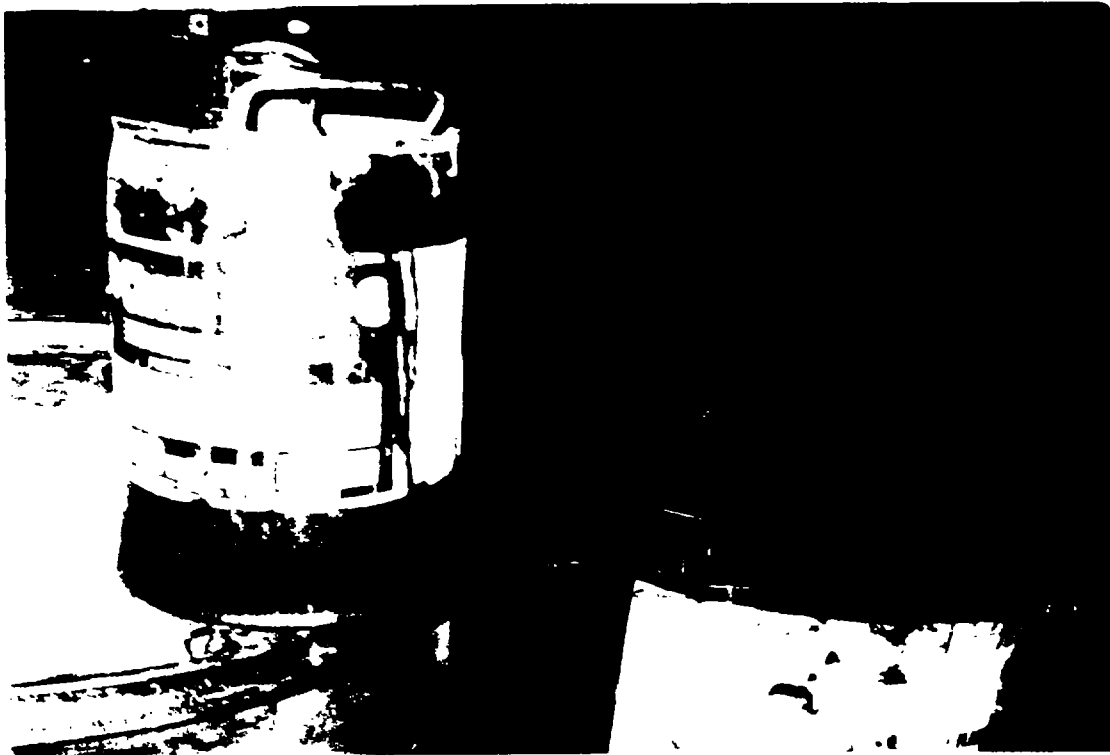
Site: Old World Trade Center
 Photo No: 6
 Direction: N/A
 Camera: Olympus Infinity
 Photographer: K.A.Ahlgren

Date: February 24, 1995
 Subject: View of a leaking drum
 located in drum grouping number
 1.



Site: Old World Trade Center
 Photo No: 7
 Direction: N/A
 Camera: Olympus Infinity
 Photographer: K.A.Ahlgren

Date: February 24, 1995
 Subject: View of drum grouping
 number 1 in Area 2, note the
 leaking drum.



Site: Old World Trade Center
 Photo No: 8
 Direction: N/A
 Camera: Olympus Infinity
 Photographer: K.A.Ahlgren

Date: February 24, 1995
 Subject: Small container
 labelled "Chem-Trend Mold
 Release, Flammable Liquid."



Site: Old World Trade Center
Photo No: 9
Direction: N/A
Camera: Olympus Infinity
Photographer: K.A.Ahlgren

Date: February 24, 1995
Subject: View of an open 5-gallon container located at the southeast corner of Area 2.



Site: Old World Trade Center
Photo No: 10
Direction: West
Camera: Olympus Infinity
Photographer: K.A.Ahlgren

Date: February 24, 1995
Subject: View of a poly 10-gallon container labeled "corrosive" located at the central-west side of Area 2.



Site: Old World Trade Center
 Photo No: 11
 Direction: West
 Camera: Fuji Discovery
 Photographer: D.L.Anderson

Date: February 24, 1995
 Subject: View of drums labelled
 "Flammable" stored at the west
 side of Area 3.



Site: Old World Trade Center
 Photo No: 12
 Direction: West
 Camera: Fuji Discovery
 Photographer: D.L.Anderson

Date: February 24, 1995
 Subject: View of the
 "Inflammable" room.



Site: Old World Trade Center
Photo No: 13
Direction: West
Camera: Olympus Infinity
Photographer: K.A.Ahlgren

Date: February 24, 1995
Subject: Miscellaneous one
gallon and five gallon
containers strewn throughout
debris in Area 3.



Site: Old World Trade Center
Photo No: 14
Direction: N/A
Camera: Olympus Infinity
Photographer: K.A.Ahlgren

Date: February 24, 1995
Subject: Numerous one and five
gallon containers staged in
Area 3, some are labelled
"flammable."



Site: Old World Trade Center
Photo No: 15
Direction: East
Camera: Olympus Infinity
Photographer: K.A.Ahlgren

Date: February 24, 1995
Subject: View of a fallen
wooden pallet, note flammable
containers in contact with
fiber drums in Area 3.



Site: Old World Trade Center
Photo No: 16
Direction: West
Camera: Olympus Infinity
Photographer: K.A.Ahlgren

Date: February 24, 1995
Subject: View of fiber and
metal containers improperly
stored.



Site: Old World Trade Center
 Photo No: 17
 Direction: West
 Camera: Olympus Infinity
 Photographer: K A Ahlgren

Date: February 24, 1995
 Subject: View of five gallon
 containers stored adjacent to
 fifty-five gallon drums in Area
 3



Site: Old World Trade Center
 Photo No: 18
 Direction: N/A
 Camera: Olympus Infinity
 Photographer: K A Ahlgren

Date: February 24, 1995
 Subject: View of a small room
 adjacent to the "flammable"
 room.



Site: Old World Trade Center
Photo No: 19
Direction: West
Camera: Olympus Infinity
Photographer: K.A.Ahlgren

Date: February 24, 1995
Subject: View of improperly
stored fiber and metal drums,
note the corrosive label and
the crushed fiber drum.



Site: Old World Trade Center
Photo No: 20
Direction: South
Camera: Olympus Infinity
Photographer: K.A.Ahlgren

Date: February 24, 1995
Subject: View of a fiber drum
labelled "Magnesium Hydroxy
Paste."



Site: Old World Trade Center
 Photo No: 21
 Direction: West
 Camera: Olympus Infinity
 Photographer: D.L.Anderson

Date: February 24, 1995
 Subject: View of drum grouping
 number 2 located at the east
 side of the parking lot.



Site: Old World Trade Center
 Photo No: 22
 Direction: N/A
 Camera: Olympus Infinity
 Photographer: K.A.Ahlgren

Date: February 24, 1995
 Subject: View of Pit 1, note
 the waste that had welled-out
 onto the surface of the ground.



Site: Old World Trade Center
 Photo No: 23
 Direction: North
 Camera: Olympus Infinity
 Photographer: K.T.Smith

Date: March 13, 1995
 Subject: View of drums piled at
 the northeast corner of the
 facility.



Site: Old World Trade Center
 Photo No: 24
 Direction: South
 Camera: Minolta SPxi
 Photographer: K.T.Smith

Date: March 13, 1995
 Subject: View of drums piled at
 the northeast corner of the
 facility, note the spillage of
 the waste.